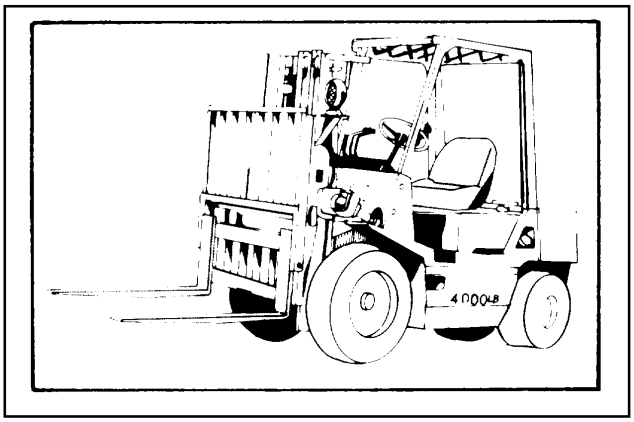
TECHNICAL MANUAL
OPERATOR'S, ORGANIZATIONAL,
DIRECT SUPPORT AND GENERAL SUPPORT
MAINTENANCE MANUAL
INCLUDING
(REPAIR PARTS AND SPECIAL TOOLS LIST)



**TRUCK, LIFT, FORK, GASOLINE
ENGINE DRIVEN, PNEUMATIC
RUBBER TIRE, 4000 POUND CAPACITY,
144 INCH LIFT, TCM MODEL
FG3ON7(T) MHE 259
NSN 3930-01-146-3990**

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HEADQUARTERS, DEPARTMENT OF THE ARMY

MARCH 1985

CHANGE

No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington D.C., 8 June 1993

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL INCLUDING (REPAIR PARTS AND SPECIAL TOOLS LIST)

FOR

TRUCK, LIFT, FORK, GASOLINE ENGINE DRIVEN, PNEUMATIC RUBBER TIRE, 4000 LB. CAPACITY, 144 INCH LIFT, TCM MODEL FG30N7(MHE259 NSN 3930-01-146-3990

Current as of 5 March 1993

TM 10-3930-653-14&P, dated 28 March 1985, is changed as follows:

1. Remove old pages and insert new pages.

2. New or changed material is indicated by an asterisk or by a vertical bar in the margin of the page.

Remove Pages	Insert Pages
iii through v (Page vi blank)	iii through v (Page vi blank)
C-1 through Figure 1	C-1 through Figure 1
2-1 through Figure 14	2-1 through Figure 14
15-1 through Figure 17	15-1 through Figure 17
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I-1 through 1-48	I-1 through I-81

3. File this change sheet in front of the publication for reference purposes.

Approved for public release: distribution is unlimited.

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Chief of Staff

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Administrative Assistant to the
Secretary of the Army
04421

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WARNING

Before working on Hydraulic System oil lines, be certain that the pressure has been relieved. This will prevent a high pressure release and resulting injury.

WARNING

Batteries produce explosive gases. Keep sparks, flame and smoking material away. Ventilate when charging or using in an enclosed space. The batteries contain sulfuric acid that causes severe burns. If acid contacts eyes, skin or clothing, flush well with water. For contact with eyes, get immediate medical attention. Remove batteries prior to performing maintenance in their immediate area or working on the starter system.

WARNING

Compressed air used for cleaning purposes will not exceed 30 PSI. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

WARNING

Use care when traveling with or without load. Avoid excessive speeds and abrupt turns.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

WARNING

Fuel and oil are slippery and can cause falls. To avoid injury, wipe up spilled fuel or oil with rags.

WARNING

If you sustain any injuries, no matter how slight, follow the first aid procedures outlines in FM 21-11.

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves and use only in well ventilated area. Avoid contact with skin, eyes and clothes and don't breath vapors. Do not use near open flame or excessive heat. If you become dizzy while using cleaning solvent, get fresh air immediately and get medical aid. If contact with skin or clothing is made, flush with water. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working around the forklift or other vehicles. Jewelry can catch on equipment and cause injury, or may short across on electrical circuit and cause severe burns or electrical shock.

WARNING

When working under this vehicle, DO NOT rely on hydraulic and mechanical jacks only; USE SAFETY STANDS.

Disconnect battery cable before repair operations in the vicinity of electrical connections or those requiring electrical disconnects.

Be aware of open flame or spark sources when working near the battery or other areas with voltatile fluids.

Never go near an open flame or spark when cleaning parts or tools with solvents.

WARNING

After Nuclear, Biological or Chemical (NBC) exposure of this vehicle all air filters shall be handled with extreme caution. Unprotected personnel may experience injury or death if residual toxic agents or radioactive material are present. If vehicle is exposed to chemical or biological agents, servicing personnel shall wear protective mask, hood, protective overgarments, and chemical protective gloves and boots. All contaminated air filters shall be placed into double lined plastic bags and moved to a segregation area away from the work site swiftly. The same procedure applies for a radioactive dust contamination; however, the Company NBC team should measure the radiation prior to filter removal to determine the extent of safety procedures required per the NBC Annex to the unit Standard Operating Procedures (SOP.) The segregation in which the contaminated air filters are temporarily stored shall be marked with appropriate NBC placards. Final disposal of contaminated air filters shall be in accordance with local SOP.

WARNINGS

This truck is provided with power steering, so hard handwheel operation is caused if the engine stalls. To put the power steering in operation again, restart the engine without delay.

Do not remove the radiator cap abruptly while the engine is hot. Turn the cap a little to the left to relieve the pressure in the radiator, then remove the cap.

FUEL HANDLING

WARNING

- Stop the truck, shut down the engine and apply the parking brake securely. Make sure that there is no naked flame near the area. Never smoke. The driver should not remain seated when adding fuel.
- After addition of fuel is finished, securely close the reservoir cap. A loose cap could cause a fuel leak or fire hazard.
- Before attempting to start the engine, make certain that no fuel is spilt on or around the truck.

WARNING

All nuts and bolts should be properly installed and torqued before inflating tire and rim assembly. An inflated tire contains potentially explosive energy. DON'T OVERINFLATE.

WARNING

When using an air compressor, first adjust the air pressure of the compressor. Failure to do so will cause a serious accident, since the compressor delivers the maximum pressure.

WARNING

Use extreme care when removing the radiator pressure cap. In a pressure system, the sudden release of pressure can cause a steam flash which would cause a serious personal injury. Loosen cap slowly to allow steam to escape. After that, tighten cap securely. It is a good practice to use a clean thick waste cloth or the like when removing the cap. Avoid putting on gloves, since you may get burnt if hot water soaks through them.

WARNING

Fan belt deflection check should be made with engine shut down.

WARNING

Exhaust fumes are very dangerous. When starting the lift truck in enclosed space, make sure there is enough ventilation. The exhaust gas check should be done outdoors. Especially use caution to avoid fire hazards. Pay special attention to signs or oil or fuel leaks and never leave waste cloth or paper inside the engine room. Make sure you know where the fire extinguishers are kept and how to use them.

WARNINGS

The electrolyte in the battery is a sulfuric acid solution. Be careful not to drip electrolyte on you or equipment. If electrolyte spills on you, splash affected areas with water to flush electrolyte. Get medical attention at once.

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area. Avoid contact with skin, eyes, and clothes and don't breathe vapors. Do not use near open flame or excessive heat. If you become dizzy while cleaning with solvent, get fresh air immediately and get medical aid. If contact with skin or clothing is made, flush with water. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

Flash point is 138OF (59 C)

Compressed air used for cleaning purposes will not exceed 30 PSI. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

WARNING

Carbon monoxide gas is a colorless, odorless, poisonous, deadly gas produced by incomplete combustion of any carbon containing material. It occurs in the exhaust fumes of fuel burning internal combustion engines, and becomes dangerously concentrated under conditions of inadequate ventilation.

WARNING

Fuel and oil are slippery and can cause falls. To avoid injury, wipe up spilled fuel or oil with rags.

WARNING

Do not remove the radiator cap abruptly while the engine is hot. Turn the cap a little to the left to relieve the pressure in the radiator, then remove the cap. Do not wear gloves when removing radiator cap, a clean thick cloth is recommended.

WARNING

Exercise care when removing snap rings, these parts are under spring tension. Severe injury may result by the part striking your eye if you don't observe this precaution. If your eye is struck by a foreign object, seek medical aid immediately.

WARNING

Exercise care when removing snap rings.

WARNING

To replace or adjust the rollers in the upright, follow the procedures below using extreme caution. Always block or chain the channels before working on each section. It is recommended for safety's sake that two people work together on upright repairs.

WARNING

Do not operate this vehicle until you have been trained and qualified to do so. Read this manual. Read all "Warning" and "Caution" plates attached to the truck; check truck name plate for capacity. Read and comply with "Warning" and "Caution" notices. "Warning" notes indicate any conditions or practices which, if not strictly observed, could result in personal injury or possible loss of life. "Caution" notes indicate any conditions or practices which, if not strictly observed or remedied, could result in damage to, or destruction of, the equipment.

WARNING

Parts of the service brake assembly will be coated with asbestos dust. Breathing this dust may be hazardous to your health. Use a filter mask approved for use against asbestos dust. Never use compressed air or dry brush to clean these assemblies. Dust shall be removed using an industrial type vacuum cleaner equipped with a high efficiency filter system. Clean dirt or mud from brake assemblies with a bristle brush or cloth and water.

WARNING

No open flames, welding, grinding or use of heat producing devices permitted near tank during maintenance unless the tank has been cleaned and purged of all flammable liquids and vapors.

WARNING

This machine can produce noise levels in excess of 85db(A). Hearing protection is required.

WARNING

Oil change is recommended to be done with engine hot. If oil change is done in this fashion, use gloves that will protect against hot oil. Care must be taken not to contact exhaust manifold or muffler while removing or replacing oil drain plug and oil filter.

CAUTIONS

KNOW YOUR TRUCK

For the purpose of doing material handling jobs the forklift truck is different from general passenger cars in structure as follows:

Poor front view due to the hoist system.

Rear wheel steering lets the rear of the truck swing outwards when going around corners.

Compactly designed, the forklift truck is heavy. Most of the weight of the truck and load is on the front wheels when loaded so the truck lacks stability.

Read the operator's manual and name plates on the truck, and become familiar with your truck and operating procedures.

CAUTION

NEVER MOVE CONTROLS UNLESS PROPERLY SEATED

Never attempt to work the controls unless properly seated.

Before starting, adjust the seat so you can have easy access to all hand and foot controls.

DON'T NEGLECT ANY DEFECT

CAUTION

Any time you find that the truck is not functioning properly, operation of the truck should be halted and the condition reported 'to the supervisor. If any warning lamp comes on, move to a safe place and check or repair the problem.
problem.

CAUTION

CHECK WORK AREA

Inspect the surface over which you will run. Look for holes, drop-offs, obstacles, and rough spots. Look for anything that might cause you to lose control, bog down or upset. Clear away trash and debris, picking up anything that might puncture a tire or let the load lose balance. Slow down for wet and slippery roads. Stay away from the edge of the road. If unavoidable, use extreme caution.

CAUTION

START SAFELY

Before starting, make sure no one is under, on or close to the truck.

Before starting up, make sure that::

- the parking brake lever is applied securely.
- the forward-reverse lever is in neutral.
- the rear view mirrors are properly set.

Don't keep the starter switch engaged for more than 10 seconds at a time, wait about 20 seconds before trying again.

CAUTION

WARMING UP & COOLING DOWN

Warm up and cool down the truck for about 5 minutes before and after work. When using your truck in an enclosed space, make sure there is enough ventilation. If needed, use a ventilation fan. Don't open the radiator cap while the engine is hot.

CAUTION

TILT BACKWARD WHEN LOADED

Travel with load as low as possible and tilted back. If operating with steel pallet or the like, be sure to tilt back the mast to prevent it from slipping off the forks.

CAUTION

CARRY THE LOAD LOW

It is dangerous to travel with forks higher than necessary regardless of whether loaded or not. Keep the good traveling posture. (When traveling, the forks should be 15 to 30 cm above the ground or floor.) Do not operate the side shift mechanism, if equipped, when the forks are raised and loaded, since this will cause the truck to be unbalanced.

CAUTION

DON'T TILT THE MAST WITH THE LOAD RAISED

Use minimum forward and reverse tilt when stacking and unstacking loads. Never tilt forward unless load is over stacked or at low lift height. When stacking loads on a high place, make the mast vertical at a height of 15 to 20 cm above the ground, and then lift the load farther. Never attempt to tilt the mast beyond vertical when the load is raised high. To unstack loads from a high place, insert forks into the pallet and drive backwards, then lower the load. Tilt the mast backwards after lowering. Never attempt to tilt the mast with the load raised high.

CAUTION

WATCH YOUR ASSETS

Be especially careful when traveling in reverse and turning. Be alert to prevent striking anything with fork tips. Due to rear wheel steering, the rear of the truck swings outwards when turning. Use caution when going around corners. The lift truck with an attachment for long-sized load requires a larger turning radius. Make sure your load is well stacked and evenly positioned across both forks. Use extreme caution when traveling on bad ground or floor surface.
surface.

CAUTION

SLOW DOWN AT CORNERS

Slow down and sound horn at cross aisles and other locations where vision is restricted.

CAUTION

WATCH FOR DOORWAYS

Watch for branches, cables, doorways, or overhangs. Use caution when working in congested areas.

DON'T STACK LOAD TOO HIGH ON FORKS

Don't stack the load on the forks in such a way that the top of the load exceeds the overhead guard height. When handling bulky loads which restrict your vision, operate the truck in reverse or have a guide.

CAUTION

AVOID BRAKING TOO SHARPLY

Avoid braking too sharply or descending on a grade at a high speed. There is danger of loads falling down or the truck turning over.

CAUTION

TO HANDLE BULKY LOADS

When handling bulky loads which restrict your vision, operate the machine in reverse or have a guide. When you have a guide, make sure you understand hand, flag, whistle or other signals. When operating with long loads such as lumber, be extremely careful of swing at corners or in narrow aisles.

CAUTION

STOP, THEN BACK UP

Always brake to a full stop before reversing direction of travel.

CAUTION

BACK DOWN & DRIVE UP

When operating loaded truck, have the rear end of your machine pointed down-hill. When climbing grades, use forward gears, and when descending, use reverse gears. Never turn sideways on an incline. There is danger of the truck turning over.

CAUTION

SLOW DOWN AT NIGHT

The operator is likely to have an illusion for distance or unevenness of the ground. Travel at a speed that will permit the truck to be brought to a stop in a safe manner. Use head lights and required work light and clearance lights.

CAUTION

LIFT TRUCK IS HEAVY

Before driving over a dockboard or bridge-plate, be sure that it is properly secured and strong enough to sustain the weight. Check the ground or floor condition of working area in advance.

CAUTION

UNSTACKING LOAD

When approaching the area where the load is to be retrieved, slow down your truck stopping the truck in front of the load, so that the distance between the load and fork tips is about 30 cm (12 inches). Check the condition of the load. Tilt the mast forward until forks become horizontal, elevate forks up to the position of the pallet or skid, making sure that the forks are positioned properly for the pallet. Move forward slowly to insert the forks into the pallet as far as possible and then stop the truck.

* If experiencing difficulty when inserting forks, use the following procedure: Move forward and insert 3/4 of the forks, raise the forks 5 to 10 cm (2 to 4 inches) and move backward 10 to 20 cm (4 to 8 inches) with ‘the pallet or skid on the forks: Lower the pallet or skid on the stack moving forward again to insert the forks fully.

Raise the forks 5 to 10 cm (2 to 4 inches) off the stack. Check all around the truck to insure that the path of travel is unobstructed and back away slowly. Lower forks to a height of 15 to 20 cm (6 to 8 inches) above the ground. Tilt the mast backward fully and move to the desired area.

CAUTION

PRECAUTIONS ON GRADE

When running down on a grade, use engine brake. While using engine brake, don't operate directional and speed control levers. If the truck exceeds the gear speed range, use the brake pedal.

AVOID WORK ON A GRADE

Never lift loads with the truck inclined, and avoid loading on a grade.

CAUTION

REMAIN SEATED

Keep your head, hands, arms, feet and legs within the confines of the operator's compartment. Never reach into the upright for any reason.

CAUTION

KEEP EYES FORWARD

Look in the direction of, and keep a clear view of the path of travel. Wandering eyes mean a wandering truck, and that could be dangerous.

CAUTION

KNOW CAPACITY OF TRUCK

Know the rated capacity of your lift truck and its attachment, if any, and never exceed it.

CAUTION

KNOW THE LOAD TO BE HANDLED

Taking account of the shape and material of loads -to be handled, use a proper attachment and tools. Avoid hoisting the load, with wire rope hung on the forks or attachment, since the wire rope may slide off.

CAUTION

USE PROPER PALLET

The pallet and skid used should be strong enough to endure the load. Never use damaged or deformed ones.

CAUTION

EASE INTO THE LOAD

Don't enter into loads at a high speed. Always make certain that your load is stable before lifting the forks. Be sure to stop in front of the load to be lifted, and make certain that there is no obstacle, then engage the load by driving forward.

CAUTION

DON'T LIFT UNSTABLE LOADS

Make certain that your load is well stacked and evenly positioned across both forks. Don't attempt to lift a load with only one fork. When working the truck with a side shift, be especially careful of load deflection. (The center of gravity of the load should be aligned with the center of the truck as much as possible.

CAUTION

ENTER LOAD SQUARELY

When load is to be retrieved from a pile, enter the area squarely, and engage forks into the pallet carefully.

CAUTION

PARKING PROPERLY

Park the truck on a level surface and apply the parking brake securely. If parking on a grade is unavoidable, be sure to block the wheels. Put the forks on the ground or floor and tilt a little forwards. Shut down the engine and remove the key.

CAUTION

TOWING THE TRUCK

If the torque converter type lift truck is towed by another machine, the propeller shaft or drive shaft between the transmission and differential should be removed to prevent the clutch plates from seizing. Don't attempt to tow a truck with a malfunctioning steering system or damaged brake system (booster malfunctioning). Obey local traffic regulations when towing the truck on public roads.

CAUTION

Equipment operation is allowable with minor leakages (Class I or II). Consideration must be given to the fluid capacity in the item/system being checked/inspected. Exceptions are fuel and brake systems, where no leakaqe is allowable. When in doubt, notify your supervisor. When operating with Class I or II leaks, continue to check fluid levels as required in the PCMS. Class III or fuel or brake system leaks should be reported to your supervisor or Organizational maintenance.

TECHNICAL MANUAL

NO. 10-3930-653-14&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 28 March I985

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL INCLUDING (REPAIR PARTS AND SPECIAL TOOLS LIST) FOR TRUCK, LIFT, FORK, GASOLINE ENGINE DRIVEN, PNEUMATIC RUBBER TIRE,4000 LB. CAPACITY, 144 INCH LIFT,TCM MODEL FG30N7(T) MHE259 NSN 3930-01-146-3990

REPORTING OF ERRORS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms) or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Tank-Automotive Command, ATTN: AMSTA-MB, Warren, MI 48090. A reply will be furnished direct to you.

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This technical manual is an authentication of the manufacturers commercial literature and does not conform with the format and content specified in AR 310-3, Military Publications. This technical manual does, however, contain available information that is essential to the operation and maintenance of the equipment.

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NOTE

This: manual is published for the purpose of identifying an authorized commercial manual for the use of personnel to whom this Forklift Truck is issued.

TCM America
Bridgeport, NJ 08014

Procured under Contract No. DAAEO7-82-C-6720

GENERAL DATA SECTION

INTRODUCTION

This manual contains operation, service and repair instructions with a parts breakdown for the TCM Model FG30N7(T). These trucks are manufactured by TCM, Shiga Prefecture, Japan, and were procured under Contract DAAE07-82-C-6720. These trucks are built to MIL-T-52932A (11 July 80).

PURPOSE OF EQUIPMENT

These internal combustion, fork lift trucks are designed for the handling, transporting and warehousing of materials over hard surfaces. In this capacity, as a self-contained, sit down, rider-type, mechanized piece of material handling equipment, they are completely equipped to lift and carry their rated capacity and lift it (when stopped) to the full rated height of the upright.

DESCRIPTION

These trucks are internal combustion, engine powered, front wheel drive, rear wheel steering, sit down rider fork lift trucks. The engine supplies the power for traveling, steering, and lifting. The "drive train" consists of the engine, the torque converter and power shift transmission, and the final drive axle. The steering is powered by the hydraulic pump through a flow divider and controlled by the steering box to the power steering cylinder. The lifting mechanism is powered by the hydraulic pump and controlled by the control valve to the cylinders. There is a hydraulic fluid reservoir, integral with the frame of the truck, filters, hoist and tilt cylinders and side shift cylinder with necessary hoses and fittings.

INSTALLATION

Since these trucks are packed and shipped in accordance with manufacturer's standard commercial practices they require only the installation of the forks, the battery cables to be hooked up properly, and all fluid levels to be checked before they are put into operation.

NOTE

The following equipment has been preserved and packaged, and is not ready for operation until the necessary depreservation and "Before Operating Services" have been performed, according to form DA2258, as supplied with the equipment. The following is a list of applicable serial numbers: 44430227 to 44430248 inclusive.

DEFINITIONS

Side Shift Carriage

An assembly attached to the lift bracket by means of wear strips and bushings and brackets so that it can be shifted laterally, by a hydraulic cylinder, four (4) inches left and right of center. The forks are mounted on the side shift carriage.

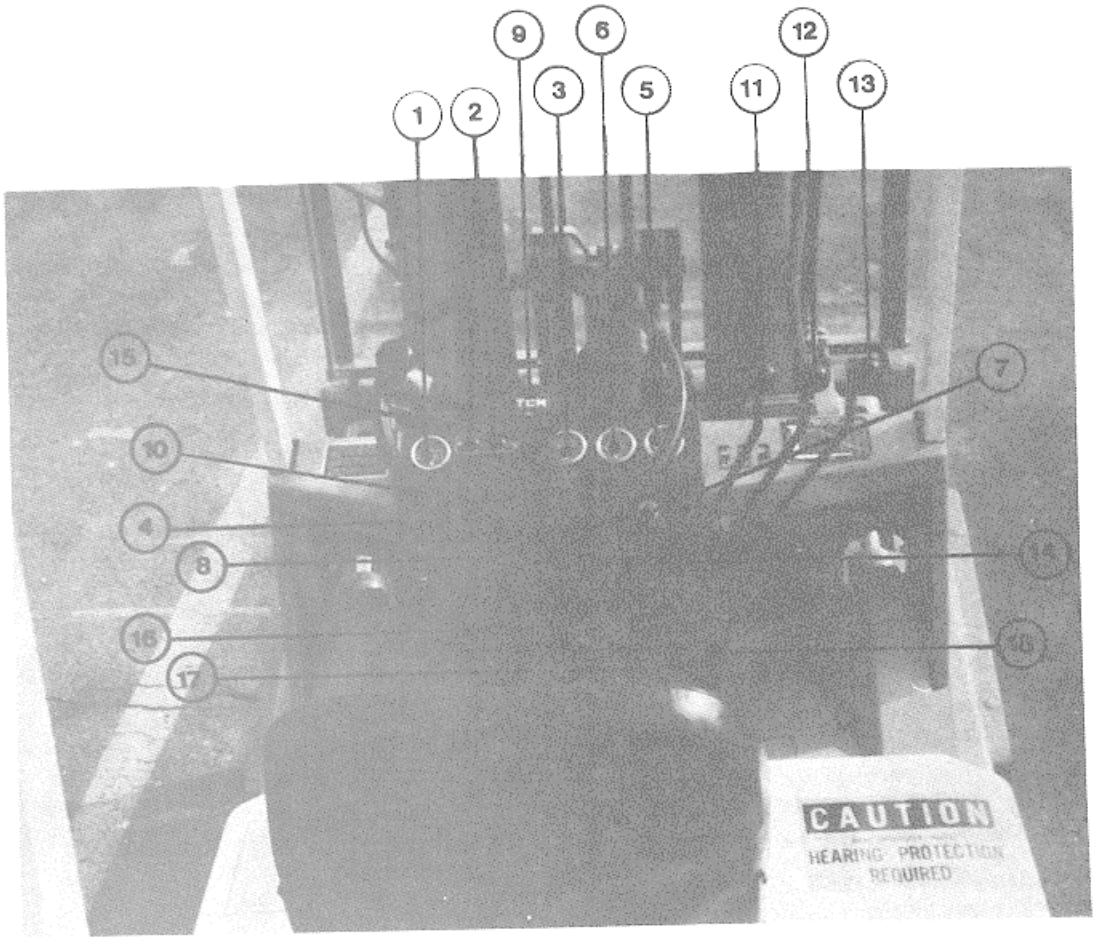
Upright

The upright is made up of three (3) channel sets each welded together (by means of cross members) as a unit and then assembled one inside the other to form a telescopic assembly that is opened by hoist cylinders by means of chains over pulleys. The final set of chains is hooked to the lift bracket or carriage.

Lift Bracket (or Carriage)

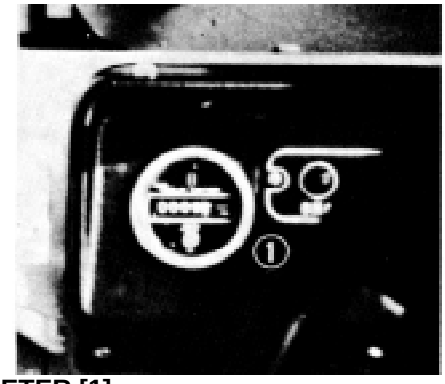
This assembly's bearings ride inside of the third set of channels. It is lifted by chains which run over the top of sheaves on the cross-head of the free-lift cylinder. The forks are mounted to the lift bracket's side shifting finger bars and can be slid across their face to adjust the spacing.

OPERATING SECTION

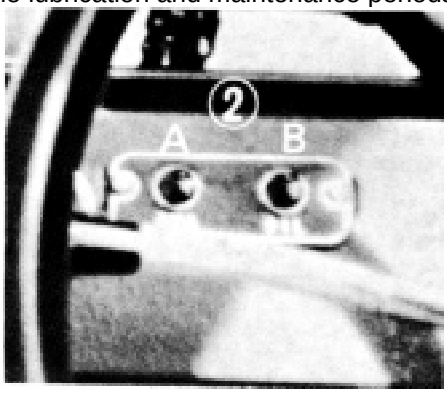


1 Hour Meter
2 Warning Lamps
3 Ammeter
4 Choke Button
5 Fuel Gauge
6 Temperature Gauge
7 Ignition Switch
8 Light Switch
9 Horn Button

10. Steering Handwheel
11. Lift Lever
12. Tilt Lever
13. Side Shift Lever
14. Parking Brake Lever
15. Forward-Reverse Lever
16. Inching Pedal
17. Brake Pedal
18. Accelerator Pedal



HOUR METER [1]
This meter measures working time of engine. Use meter to schedule lubrication and maintenance periods.



WARNING LAMPS [21]
These warning lamps indicate whether or not their corresponding devices are working properly Each lamp lights up when an abnormal condition takes place in the corresponding device.

CAUTION

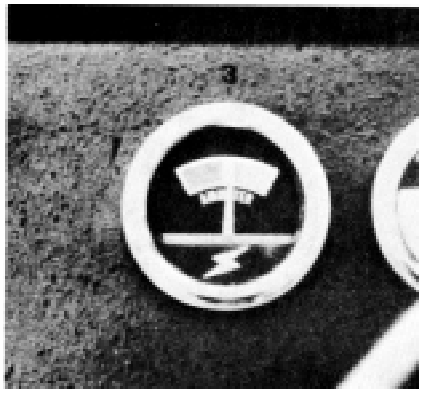
If the light continues to stay lit or lights up during operation, the charging rate is low and should be checked immediately.

CHG (A)
This lamp indicates the battery condition of charge The lamp comes on when the ignition switch is set at "ON"*, but it goes out as the engine starts and accelerator pedal is pressed.

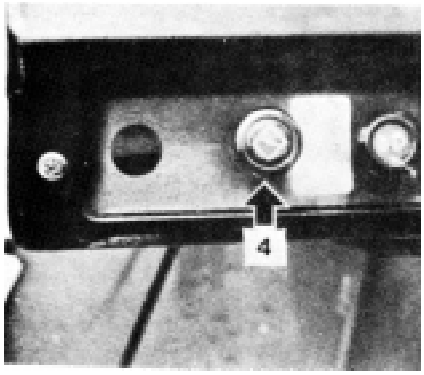
CAUTION

If this light continues to stay lit or lights up during operation, the pressure is insufficient and should be checked Immediately.

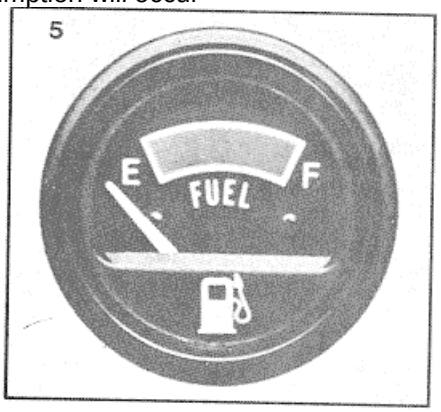
OIL (B)
This lamp indicates the pressure condition of engine lube oil. Although it lights up when the engine switch is set at "ON" , once the engine starts up and the accelerator pedal is depressed, this lamp goes out



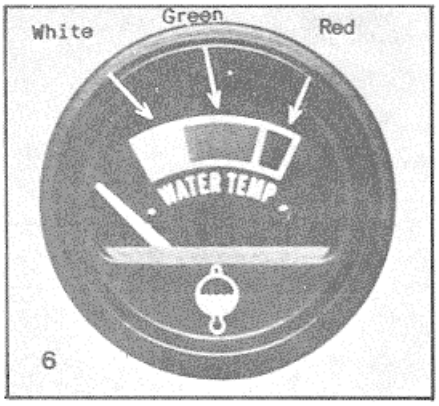
AMMETER [3] -
This indicates the battery state of charge. During engine running, the pointer should indicate plus (+) side.



CHOKE BUTTON [4]
When starting a cold engine, first pull out this choke button and turn the key switch. After the engine Is started up, do not fall to return the choke button into the original position, otherwise, engine trouble or increased fuel consumption will occur



FUEL GAUGE [5]
When ignition switch is set to the position "ON"*, the gauge informs operator how much fuel remains in the fuel tank "E" mark stands for "Empty", "F" "Full".



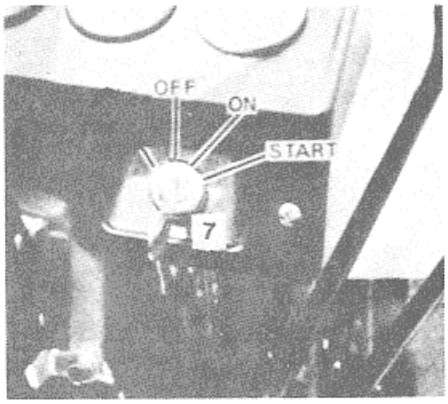
CAUTION

It the pointer enters the red range, stop the operation instantly and slow down engine speed to cool the coolant and wait until the pointer goes into the green range.

ENGINE COOLANT TEMPERATURE GAUGE [6]

This gauge indicates the temperature of engine coolant. Under normal conditions, the pointer should be in the green range. 'f the pointer stays in the white range, idle the engine until it enters the green range

SWITCHES



IGNITION SWITCH [7]

The key is a reversible type so the operator can easily put it into the switch. Furthermore it is of the anti-restart design.

CAUTION

1. Do not keep the starter switch in the "ON" position while the engine is shut down. This results In a discharged battery.
2 Do not keep the starter engaged for more than 15 seconds at a time. Wait about 20 seconds before trying again

OFF

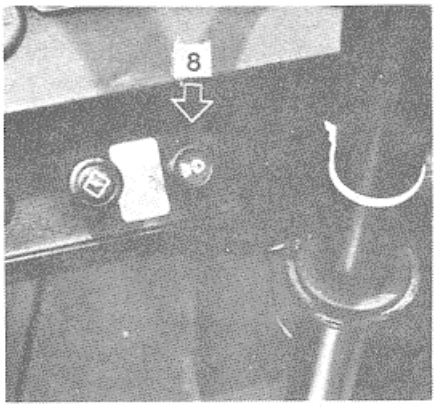
This is position at which the key is inserted or drawn out.

ON

The electric circuit is closed with the starter switch at ON After the engine is started the key should return to this position

START

As the key is placed in the "START" position, the starter motor is engaged. When removing hand from key. it is automatically returned to the "ON" position by spring force.



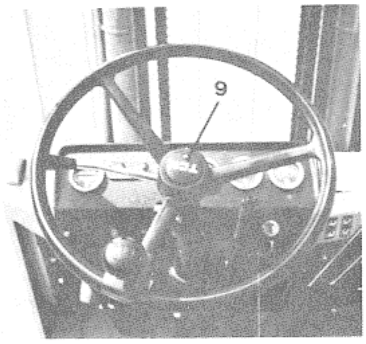
LIGHT SWITCH [8]

This light switch can be pulled out three steps.

Light-	Stage	0 OFF	1st	2nd	3rd
Tail Light		OFF	ON	ON	ON
Head Light	Low	OFF	OFF	ON	OFF
	High	OFF	OFF	OFF	ON

NOTE

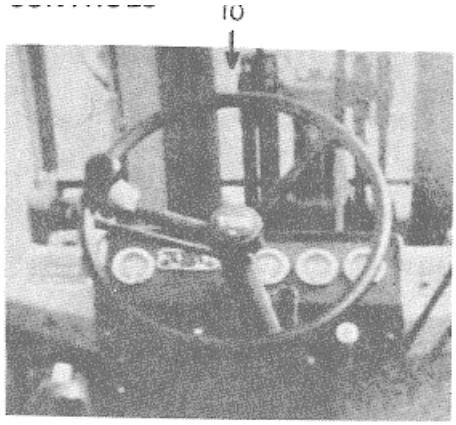
The above lights are turned on or off by the light switch regardless of starter switch position, so use this switch to turn off the lights



HORN [9]

To give alarm to fellow worker(s) around and in the path of your truck, press the rubber cover marked TCM a: the center of the handwheel. The horn can be used regardless of starter switch position.

CONTROLS

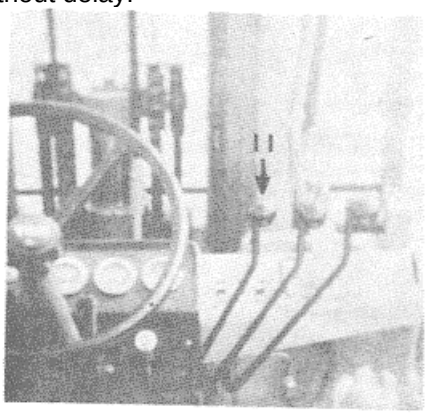


STEERING HANDWHEEL [10]

The steering handwheel is operated in the conventional manner, that is, when the wheel is turned right the truck will turn to the right, when the wheel is turned left, the truck will turn to the left. The steer wheels are located at the rear of the truck These cause the rear of the truck to swing out when a turn is made. With a little practice, this type steering will be easily mastered.

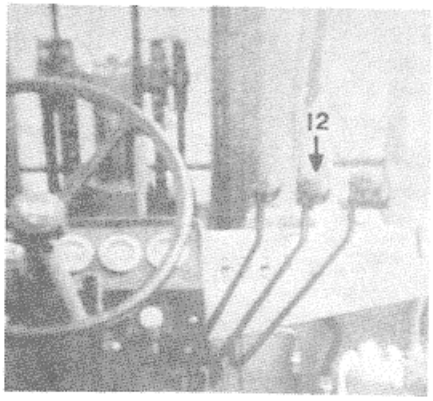
WARNING

This truck is provided with power steering, so hard handwheel operation is caused if the engine stalls. To put the power steering in operation again, restart the engine without delay.



LIFT LEVER [11]

The forks can be raised or lowered by pulling backwards or pushing forwards on this lever The lift speed is controlled by tilt angle of the lever and accelerator pedal The lowering speed can be controlled by tilt angle of the lever The engine speed does not effect the lowering speed of the forks.

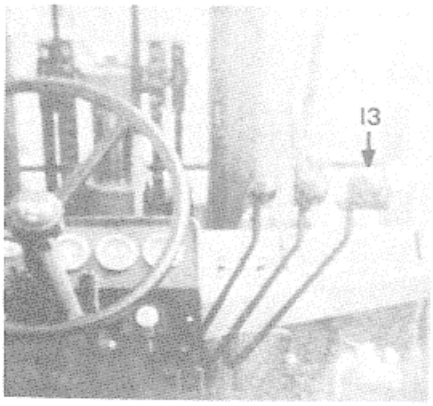


TILT LEVER [12]

The mast can be tilted by operation of this tilt lever. Pulling on this lever will tilt the mast backwards, and pushing it forward will tilt the mast forward. The tilt speed can be controlled by tilt angle of the lever and accelerator pedal.

CAUTION

The tilt lock mechanism built in the hydraulic circuit does not allow the mast to tilt forward while the engine is shut down.

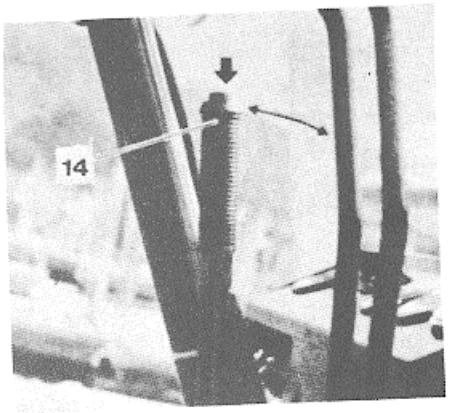


SIDE SHIFT LEVER 13

This lever will cause the side shift carriage to shift left when pushed forward or right when pulled back.

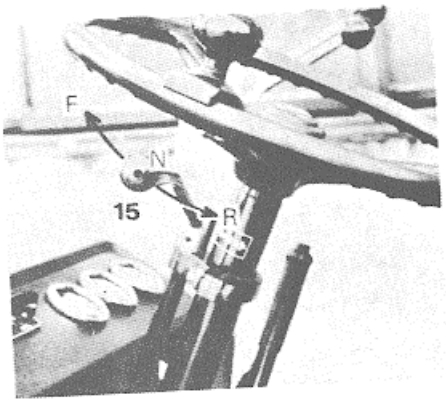
CAUTION

Do not side shift radically with forks high in the air or the inertia of the load will tip the truck sideways.



PARKING BRAKE LEVER [14]
Use this parking brake lever to park the lift truck. The parking brakes are applied on the front two wheels by pulling up on this lever. To release the parking brakes, apply a slight pull and then press the top button, and allow the lever to move forward till it stops.

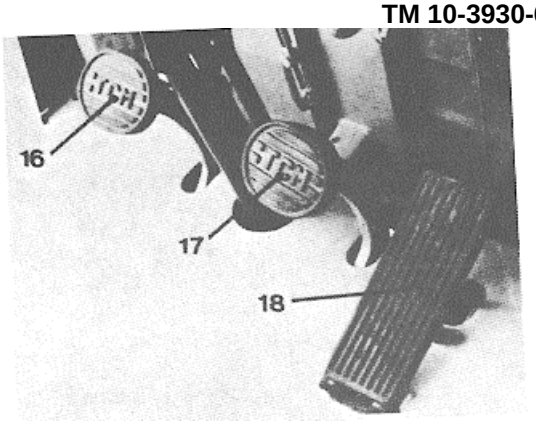
CAUTION
If parking on a grade is unavoidable, be sure to block the wheels.



FORWARD-REVERSE LEVER [15]
TORQUE CONVERTER TYPE

F	FORWARD
N	NEUTRAL
R	REVERSE

The transmission control is a steering column-mounted type and has one speed forward and reverse. Always brake to a full stop before reversing the direction of travel.



.

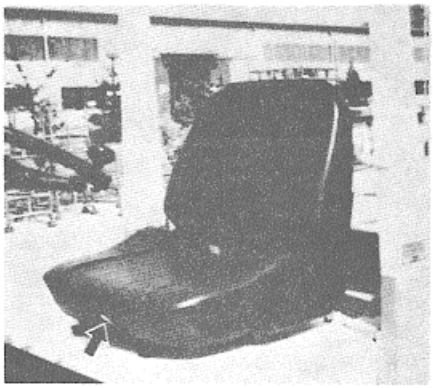
INCHING PEDAL [16]

TORQUE CONVERTER TYPE
As the inching pedal is pressed the oil pressure In the hydraulic clutch drops accordingly allowing the operator to perform inching operation Use this pedal to Inch the truck while operating the hoist system at high speed.
When pressed further the Inching pedal serves as a brake pedal.

BRAKE PEDAL [17]
Press this brake pedal to slow or stop the truck. At the same time, the brake lights come on.

ACCELERATOR PEDAL [18]
The accelerator pedal increases the engine speed. With this pedal released, the engine runs at idle rpm.

BODY & OTHERS



SEAT ADJUSTING LEVER

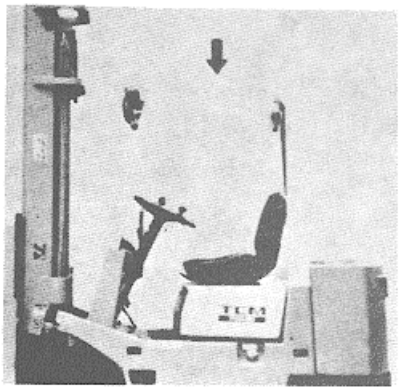
Adjust operator's seat to position which is comfortable for you and provides easy access to all hand and foot controls. The seat is unlocked by moving the adjusting lever to the right. Before proceeding with work, adjust operator's seat and make sure that It is securely locked.

DOCUMENTS POCKET

A large, easy-to-use documents pocket is provided at the back of the driver's seat.

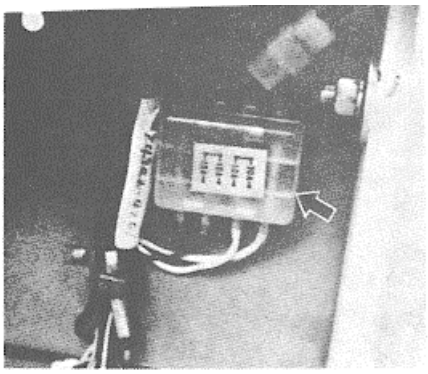
BRAKE FLUID RESERVOIR

The brake fluid reservoir is provided at the left side of the cabinet Inner surface This translucent reservoir allows you to inspect the fluid level from the outside



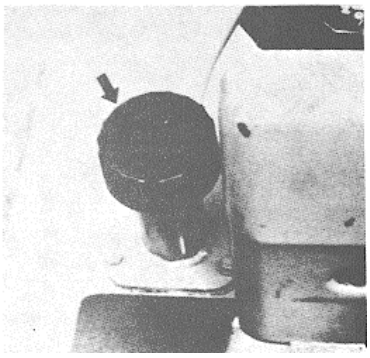
OVERHEAD GUARD

The overhead guard is strong enough to meet safety standard and protects the operator from falling materials



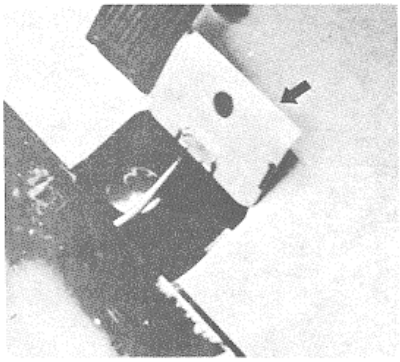
FUSE BOX

The fuse box is located at the right side of the cabinet inner surface.



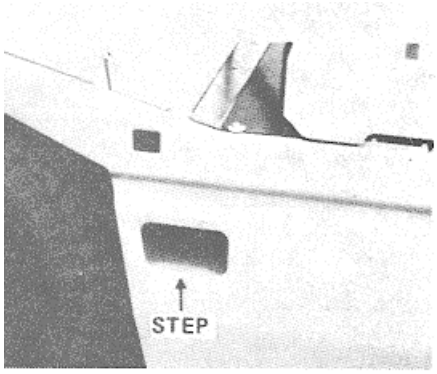
HYDRAULIC FLUID RESERVOIR CAP

The hydraulic fluid reservoir cap is located at the right side under the hood. Fill hydraulic fluid through this filler port. The cap is provided with a dipstick



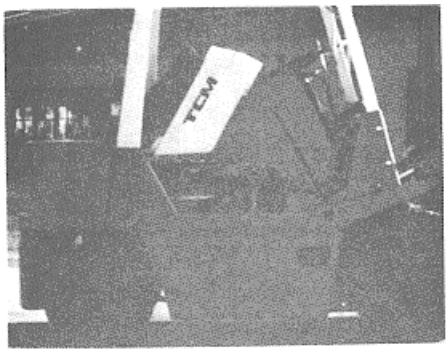
TRANSMISSION FLUID INSPECTION COVER

The transmission fluid Inspection cover is at the right side of the floorboard Under this cover the filler cap with level dipstick is found.



SAFETY STEP

The safety steps are provided on both sides of the truck body. Use the safety step when mounting and dismounting the truck.

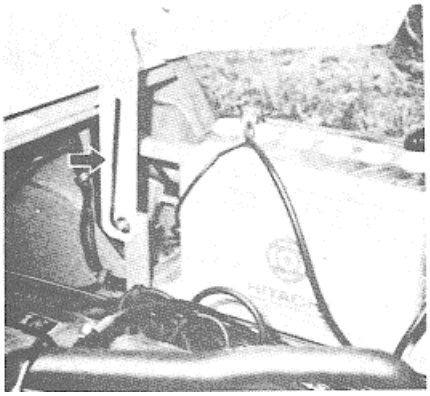


HOOD

The hood can be swung up fully to provide easy maintenance service.

CAUTION

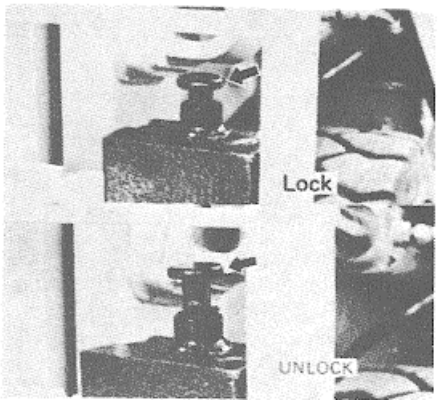
Use caution not to catch your fingers In the hood when closing it



HOOD LOCKING DEVICE

The hood is automatically locked when completely swung open. To close, push it up to unlock the locking device and bring it down slowly.

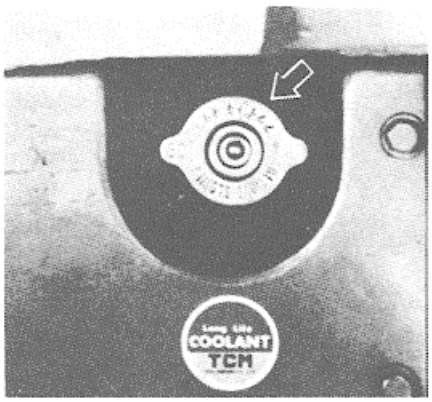
FORK STOPPER



Fork stoppers are to lock the forks In position. To adjust fork spacing, pull up fork stoppers, turn, and shift the forks to the desired positions The fork spacing should be adjusted according to loads to be handled.

CAUTION

The forks should be set symmetrically to machine centerline and fork stoppers should always be set.



RADIATOR CAP

The radiator cap is located at the rear part of the hood. To remove the cap, turn it left 90°.

WARNING

Do not remove the radiator cap abruptly while the engine is hot Turn the cap a little to the left to relieve the pressure In the radiator, then remove the cap.

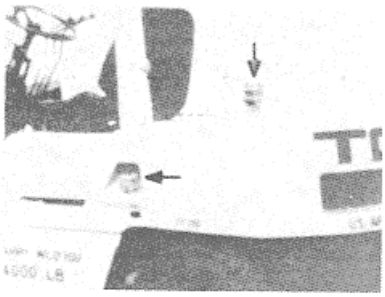
LIGHTS & LAMPS

HEAD LIGHT

A head light is installed on the front of the truck. Take care of the light and wipe off dirt, if any, and replace any damaged light immediately.

REAR LAMP

This combination stop and tail lamp provides warning to other drivers that you are braking.



FUEL RESERVOIR CAP(GASOLINE)

The fuel reservoir cap is located at the rear left side of the truck body To open release latch and lift cap against sprinq tension

WARNING

-FUEL HANDLING-

- Stop the truck, shut down the engine and apply the parking brake securely. Make sure that there is no naked flame near the area. Never smoke. The driver should not remain seated when adding fuel.
- After addition of fuel is finished, securely close the reservoir cap. A loose cap could cause a fuel leak or fire hazard.
- Before attempting to start the engine, make certain that no fuel is spilt on or around the truck.

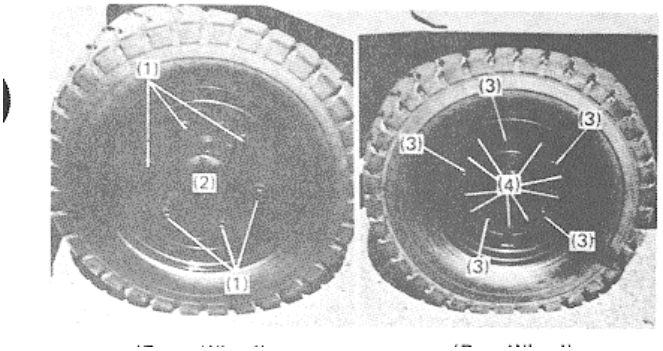
[3] TIRE INFLATION PRESSURE CHECK

Check condition of tires. Low air pressure reduces tire service life and increases fuel consumption. Uneveness of air pressure between right and left tires or unevenly worn or badly damaged tires will cause uneven steering forces.

< Inflation Pressure >	kg/cm2 (psi)
Sinqle Drive Wheels	8,5 (120)
Steering Wheels	7 (100)

Turn the tire valve cap counterclockwise and remove it. Using a tire pressure gauge, measure the inflation pressure, and adjust it to the specified pressure, if needed. After making sure there is no air leakage from the tire valve, reinstall the cap.

Check that each tire does not get damaged at the tread surface or side face or there is no bending at the rim, Since the forklift truck needs tires that have a high inflation pressure to carry heavy loads, even a small bending of rims or damage at the tread surface could cause an accident. If the operator finds any defect on the tires, consult TCM's dealer or distributor.



(Front Wheel) (Rear Wheel)

- Stop the truck on a level, hard surface and shut down the engine. All loads should be unloaded from the truck.
- Apply the parking brake and block the wheels. Put the jack under the truck frame.
- Jack up the truck to the extent that the tire still remains on the ground. Loosen the hub nuts Do not remove them.
- Again jack up the truck until the tire leaves off the ground. Remove the hub nuts, and detach the wheel.
- The wheel should be reinstalled in the reverse order The hub nuts should be tightened in the diagonal order evenly.

WARNING

All nuts and bolts should be properly installed and torqued before inflating tire and rim assembly, An inflated tire contains potentially explosive energy.
DON'T OVERINFALTE.

WARNING

When using an air compressor, first adjust the air pressure of the compressor. Failure to do so will cause a serious accident, since the compressor delivers the maximum pressure.

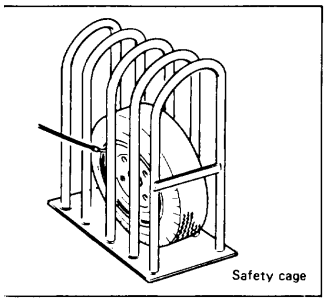
[4] HUB NUT TORQUE CHECK

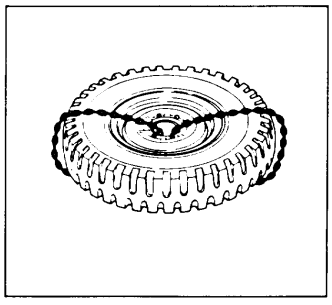
Check hub nuts for correct torque. All hub nuts should be tightened to the specified torque securely.

(1) Front Wheel Hub Nut..... 39 to 45 kg-m (282 to 325 ft-lbs)
(2) Drive Shaft Nut ..... 7.8 to 9.0 kg-m (56 to 65 ft-lbs)
(3) Rear Wheel Hub Nut ..... 39 to 45 kg-m (282 to 325 ft-lbs)
(4) Rear Wheel Divided Rim Nut..... ..6.6 to 7.6 kg-m (48 to 55 ft-lbs)

WARNING

- When removing tire assembly from the truck, remove only HUB NUTS 3. Never loosen split type wheel nuts 4before deflating tires.
- Completely deflate tires before removing split type wheel nuts 4,
- Tires with split wheels should be inflated in a safety cage or when properly Installed on the truck In either case, make sure all nuts and bolts are properly Installed and torqued as specified
- If wheel nuts on the drive axle are loose, tighten nuts to specified torque after removing tire and wheel assembly from the truck.
- Tires with lock ring type wheels should be Inflated in a safety cage or with attaching safety chain





REFILL CAPACITIES

LUBE POINTS	
Engine crankcase	4.2(1.1)
Cooling system	8 (2.1)
Fuel tank Automatic transmission	52 (13.7) 7 (1.8)
Reduction & Differen-tial	3.5 (0.9)
Brake fluid reservoir	0.2 (0.05)
Hydraulic oil tank	23 (6.1)

SERVICE SPECIFICATIONS

ENGINE	("H20" Gasoline)
Idle r.p.m	500 to 600 rpm
High Idle r p.m	2850 to 3050 rpm
Firing order	1 3 4 2
Ignition timing	8- B T D C/650 rpm
Injection start press	
Compression	11 kq'cm2 (156 psi),'
300 rpm	
Spark plug	NGK B-4E or HITACHI L47
Spark plug gap 0.7 to 0 8 mm	(0.027 to 0 031 in.)
Fan belt deflection	10 to 20 mm (0 4 to 0 8 in)
Valve clearance	0.36 to 0.4 mm (0014 to 0016n) - hot engine

FUEL RECOMMENDATION - GASOLINE

AUTOMOTIVE QUALITY, UNLEADED or LOW-LEAD, REGULAR GRADE GASOLINE
OCTANE NUMBER 85 MINIMUM

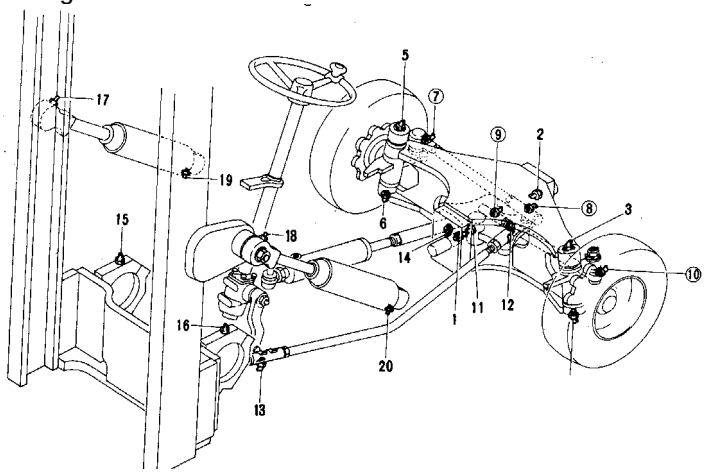
TIRE FASTENERS TORQUE

Unit kg m (ft lbs

FRONTWHEEL	REAR WHEEL
39 to 45	12to 14
(282 to 325	(87 to lo01

GREASE FITTING LOCATION

MAST & STEER SYSTEM 24- Fittings.



NOTE:

21. Lower left Guide of Side Shifter.
22. Lower Right guide of Side Shifter.
23. Upper Right, Shaft Guide of Side Shifter.
24. Upper Left, Shaft Guide of Side Shifter.

MAINTENANCE SECTION (PREVENTIVE)

DAILY CHECKS BEFORE OPERATION

CHECK TO BE SURE THAT ANY PREVIOUS FAILURES HAVE BEEN CORRECTED.

If at any time a powered industrial truck is found to be in need of repair, defective, or in any way unsafe, the matter should be reported immediately to the designated authority, and the truck should be taken out of service until it has been restored t,, safe operating condition.

CAUTION

Don't make repairs or adjustments unless specifically authorized to do so.

CHECK LEAKS OF OIL, FUEL OR WATER

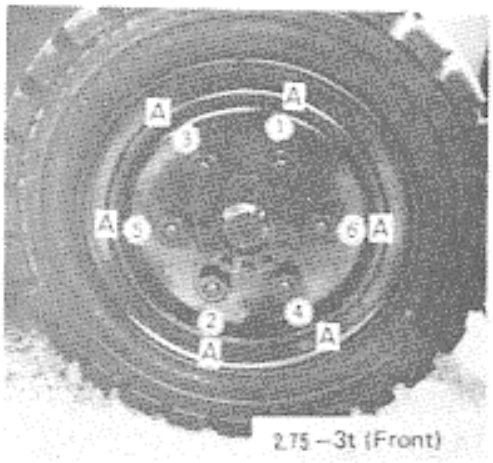
Check joints of the hydraulic piping, engine, radiator and driving system for oil and water leaks. Check leakage with your finger as well as visually.

CAUTION

Do not attempt to operate the truck if leaked fuel is found during preoperational check. Correct the leak before starting the engine.

HUB NUT TORQUE CHECK

Check hub nuts for correct torque. All hub nuts should be tightened to the specified torque securely.



TIRE INFLATION PRESSURE CHECK

Check condition of tires. Low air pressure reduces tire service life and increases fuel consumption. Unevenness of air pressure between right and left tires or unevenly worn or badly damaged tires will cause uneven steering forces.

WARNING

All nuts and bolts should be properly installed and torqued before inflating tire and rim assembly. An inflated tire contains potentially explosive energy.
DON'T OVERINFLATE.

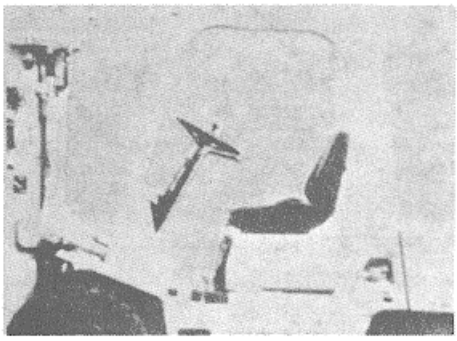
WARNING

When using an air compressor, first adjust the air pressure of the compressor. Failure to do so will cause a serious accident, since the compressor delivers the maximum pressure.

The standard tire pressures are indicated below:

(Inflation Pressure) [kg/cm2 (psi)]
Drive Wheels 7 (100)
Steering Wheels.....7 (100'
Turn the tire valve cap counterclockwise and remove it. Using a tire pressure gauge, measure the inflation pressure, and adjust it to the specified pressure, if needed.
After making sure there is no air leakage from the tire valve, reinstall the cap.
Check that each tire is not damaged at the tread surface or side face or bending at the rim.
Since the forklift truck needs tires that have a high inflation pressure to carry heavy loads, even a small bending of rims or damage at the tread surface could cause an accident. If the operator finds any defect in the tires, consult your Supervisor.

OVERHEAD GUARD CHECK



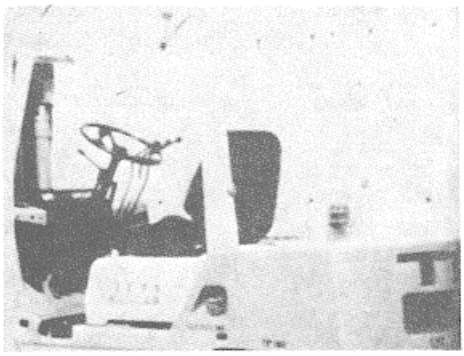
The overhead guard is for your protection. Make certain that it is securely mounted and all structural members are secure.

BRAKE FLUID LEVEL CHECK

Check the fluid level it, the brake fluid reservoir. The level should be between the two seams of the reservoir. When adding fluid, due care should be taken to prevent dirt or water from entering the reservoir.
Add only DOT 5 fluid.

REAR COMBINATION LAMP CHECK

Check rear combination lamps (tail brake, & rear reflector) for damage or contamination.



HYDRAULIC OIL LEVEL

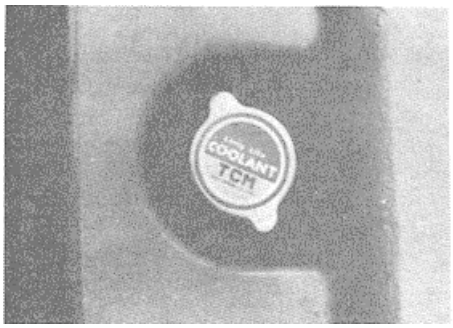
Check hydraulic oil level by means of the oil level dipstick: Remove the oil level dipstick and clean it.
Reinsert it and remove again to see if the oil level is between two slots: High and Low.

CAUTION

The oil level check should be done with engine shut down, forks on the ground or floor, and the truck itself on a level surface.

COOLANT LEVEL CHECK

Remove the radiator ca. by turning it left. Have a look through the radiator port. If coolant is observed, the level Is appropriate.
(Long life coolant is supplied so it appears green.) To close the radiator cap, align the latch inside the cap with the notch on the port and press the cap turning it right.



WARNING

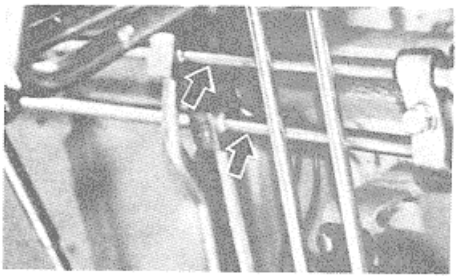
Use extreme care when removing the radiator pressure cap. In a pressure system, the sudden release of pressure can cause a steam flash which would. Cause a serious personal injury. Loosen cap slowly to allow steam to escape. After that, tighten cap securely. It is a good practice to use a clean thick waste cloth or the like when removing the cap. Avoid putting on gloves, since you may' get burnt if hot water soaks through them.

CAUTION

The radiator cap should only be removed to check coolant level prior to engine start or after engine has stopped and had time to cool down.

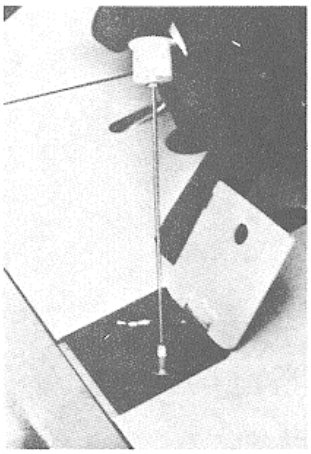
PIPING & CYLINDERS

Visually check hydraulic oil pipings and lift and tilt cylinders-, for oil leaks.



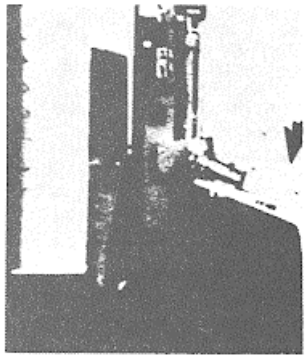
AUTOMATIC TRANSMISSION FLUID LEVEL

Open the Inspection cover and remove the filler cap. Inspect the level gauge to make sure that the fluid level is on the upper mark of the gauge. Add fluid, if necessary.



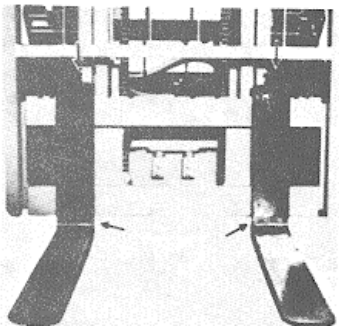
LOAD BACKREST CHECK

Check for loose mounting bolts of the load backrest. Retighten where needed.



FORKS & FORK STOPPERS

Check fork stoppers for correct installation and forks for bending or cracks.



HEAD LIGHTS & FRONT COMBINATION LAMPS

Check for dirty or damaged lens.

Open the hood from the left side of the truck and securely support it by the hood stay.

BATTERY ELECTROLYTE CHECK

Check electrolyte level in the battery.
The battery case is given upper and lower level marks to allow the operator to see the electrolyte level.
The level should be between the two marks.

CAUTION
Never allow flame or sparks near the battery filler holes because explosive hydrogen gas may be present.

ENGINE OIL LEVEL CHECK

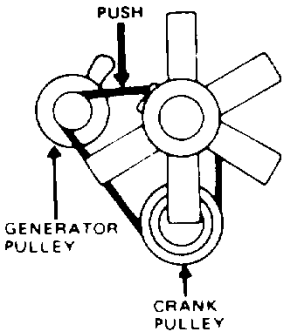
The engine oil level dipstick is located on the right side of the engine. Remove the oil level dipstick, clean the rod and reinstall.
Pull it out again and check the oil level. The level should be within the mark on the dipstick.

CAUTION
If you check the oil level when the oil is cold, don't run the engine first, The cold oil will not drain back to the pan fast enough to give a true oil level.

FAN BELT TENSION CHECK

Check the fan belts for correct tension and damage. The deflection of the belts when the midpoint between the water pump pulley and the generator pulley is pushed by the thumb is about 10 to 15 mm (0.4 to 0.6 in.).

WARNING
Fan belt deflection check should |be made with engine shut down.



H20

Close the hood...

Take care not to catch your finger in the hood.

DRIVER'S SEAT ADJUSTMENT

Make sure the driver's seat is properly located. If not, shift the adjusting lever to the right and move the driver's seat to a position which provides easy access to all hand and feet controls. After adjustment,.
shake the driver's seat a little to be sure that it is securely locked.

SHIFT LEVER CHECK

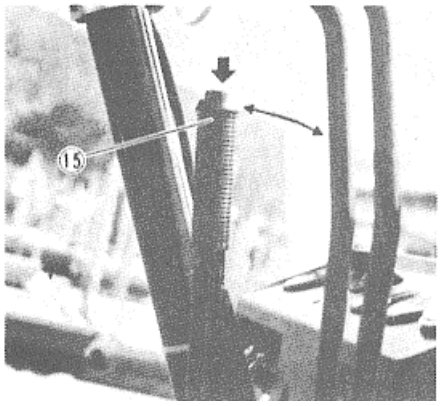
Check the shift lever(s) for looseness and operation.

LOADING LEVERS CHECK

Check the loading levers (for lift, tilt & optional attachment) for looseness and smooth operation.

PARKING BRAKE OPERATION CHECK

Make sure that the parking brake is securely applied by operating the parking brake lever. Under the normal conditions, the parking brake gets applied after 5 to 9 clicking sounds are heard.

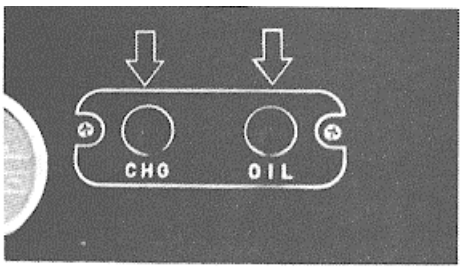


Start the engine..

NOTE: Before starting the engine make certain the shift lever(s) is in neutral and parking brake is securely applied.

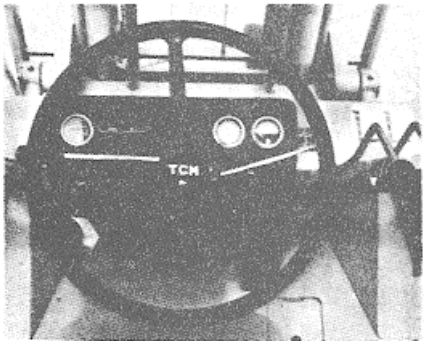
WARNING LAMPS

When the starter switch is turned ON, warning lamps (OIL 8 CHG) come on.
These lamps go off soon after the engine is started.



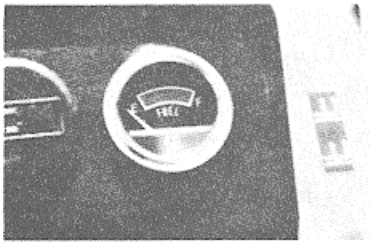
METERS & GAUGES

The hour meter, coolant temperature gauge and fuel level gauge are provided to inform the operator of the operating condition of the truck during operation.



FUEL LEVEL CHECK

The fuel level gauge is provided on the indicator panel. Check that fuel level is sufficient for the day's work.



CAUTION

Fill the fuel tank at the end of each work day; this practice will reduce the condensation of moisture within the tank.

LIGHTS & LAMPS

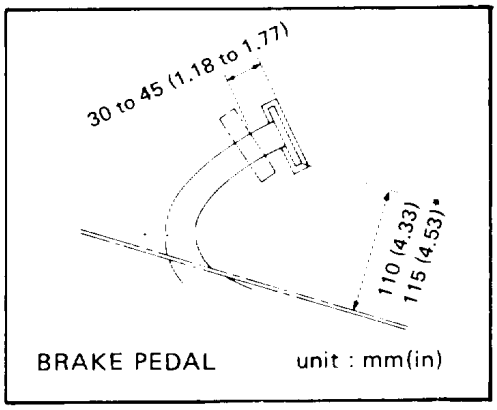
Actuate each light or lamp switch to be certain that the respective light or lamp comes on properly.

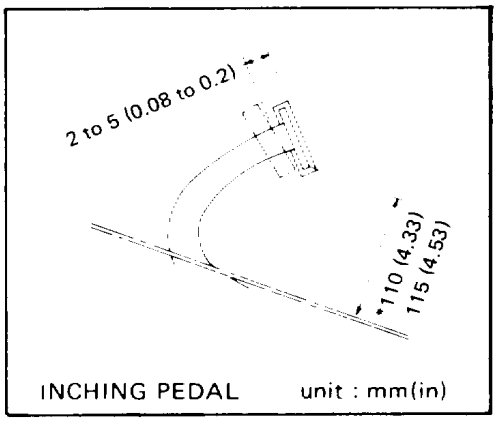
HORN BUTTON OPERATION CHECK

Press the horn button to make certain the horn sounds.

BRAKE PEDAL FREE TRAVEL

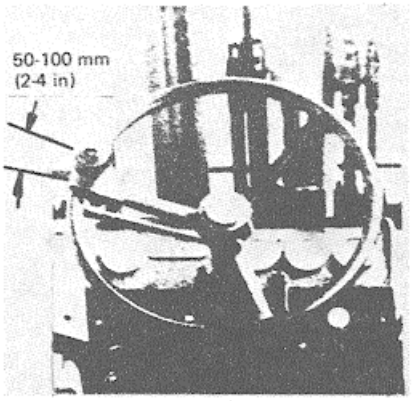
Press the brake pedal/inching pedal to make certain that each pedal can be pressed smoothly and that it also can restore without interference. The brake pedal free travel is 45mm (1.77mm) [FG1O to 251 or 35mm (1.38 in.) [FG28 to FD30] or 30mm (1.18 in.) [Torque Converter Type]; the inching pedal free travel is 2 to 5mm (0.08 to 0.2 in.).





STEER HANDWHEEL FREE PLAY

Check the steer handwheel for play and vertical looseness. The normal play is 50 to 80mm (2 to 3 inches) and vertical looseness is not permitted.



MAST OPERATION

Sound horn, and actuate the lift and tilt levers to be certain that the carriage moves up and down properly and the mast can be tilted smoothly.
Make certain that the relief valve operates accompanying its relieving sound when each cylinder piston reaches the stroke end. Pay attention to system operating sound.

CAUTION

- WARM UP CYLINDERS-

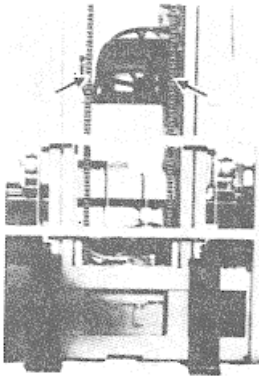
Warm up the hydraulic cylinders before putting the truck to work.
This lubricates the packings and seals in the cylinders to get them ready for operation.

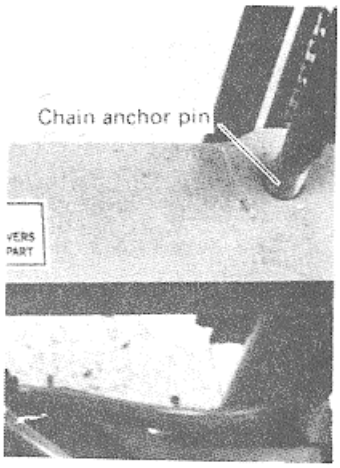
CAUTION

Don't tilt the mast forward while the carriage is lifted high, especially when a clamp attachment is fitted to the truck.

LIFT CHAIN TENSION CHECK

Check the tension and abnormality of the lift chains. To check the tension, raise the fork about 5cm (1.97 inches) above the ground and push the middle of the chain with the thumb. Make certain the tension for the right and left chains is even. If uneven tension is found, loosen the lock nut of anchor pin and adjust the chain, turning the adjusting nut of the chain anchor pin.





CAUTION

Don't use "Grease" but "Machine Oil (ex. Hydraulic Oil)" only for lift chain lubrication. SAE 50w is normally recommended except for extremely cold areas.

EXHAUST GAS CHECK

Check condition of exhaust gas after the engine warm-up is finished.

Colorless or bluish:
Normal - Complete combustion

Black:
Abnormal - Incomplete Combustion

White:
Abnormal - Oil Consumption Check also the engine and driving system for clicking or any abnormal noise or vibration.

WARNING

Exhaust fumes are very dangerous.
When starting the lift truck in enclosed space, make sure the,-e is enough ventilation. The exhaust gas check should be done outdoors. Especially use caution to avoid fire hazards. Pay special attention to signs of oil or fuel leaks and never leave waste cloth or paper inside the engine room. Make sure you know where the fire extinguishers are kept and how to use them.

BRAKE TEST

Run the truck slowly and press the brake pedal to check the braking effect. When the brake pedal is pressed, the stop lamp comes on.

STEERING CHECK

Turn the steering wheel while traveling slowly to see that the steering forces are equal in right and left or that any abnormality does not exist.

CAUTION

The steering system employs the power steering. While the engine is shut down, the power steering becomes ineffective, causing a heavy steering operation.

PARKING BRAKE TEST

Make certain that the slowly running truck can be stopped by pulling on the parking brake lever. And also make sure the truck does not move and keeps its stopping position.

PREVENTIVE MAINTENANCE SERVICE SCHEDULE

This service schedule is worked out on the assumption that the lift truck will be used under typical working conditions. If the lift truck is used under severer working conditions, earlier preventive maintenance services are required. (The black dots in the table mean Replacement".)

G: Gasoline Truck

ENGINE

Checking Item	Service Required	Daily	Monthly (100 hrs)	Semiannually (600 hrs)	Annually (1200 hrs)
Engine	Visually inspect condition of engine rotation.	O	O	O	O
	Check for working noise from engine	O	O	O	O
	Check that exhaust gas has proper color.	O	O	O	O
	Check air cleaner element for dirt and clean.		O	●	●
	Check that valve clearance is correct.			O	O
	Retighten cylinder head bolt				O
	(H20 Gas.				
	Check cylinders for proper compression.				O
	Check metering valve and pipe for clogging or damage (G).			O	O
PCV Device					
Governor	Check no load maximum rpm.				O

ENGINE

Checking Item	Service Required	Daily	Monthly (100 hrs)	Semiannually (600 hrs)	Annually (1200 hrs)
Lubrication	Check for engine oil leak.	O	O	O	O
System	Check engine oil for level and dirt.	O	O	O	O
	Replace engine oil.		● (at initial 25 hrs)	●	●
	Replace engine oil filter cartridge (G)			●	●
Fuel System	Visually check for fuel leak from pipe, pump or tank.	O	O	O	O
	Check fuel filter for clogging			O	O
	Clean fuel filter (G).			O(H20)	● (H20)
	Check carburetor link mechanism for loose ness or dirt (G).			O	O
	Check for ignition timing (G).			O	O
	Drain off water from fuel tank.			O	O
	Clean fuel tank.			O	O
	Check for fuel level.	O	O	O	O

SAFETY APPARATUS & ACCESSORIES

Checking Item	Service Required	Daily	Monthly (1 hrs)	Semiannually (600 hrs)	Annually (1200 hrs)
Driver's Seat	Check for damage or loose bolts.			O	O
Body	Check frame and cross members for dam age or cracks.				O
	Check for loose rivets or bolts				O
	Check items repaired in preceding Inspection, if any.	O	O	O	O
	Inspection general condition of body.	O	O	O	O
Grease up & Oil Change	After cleaning, check for greased condition of chassis.		O	O	O
	Check oil condition of oil and fluid in reservoir.				O

ENGINE

Checking Item	Service Required	Dally	Monthly (100 hrs)	Semiannually (1200 hrs)	Annually 1600 hrs)
Cooling System	Check for coolant level	O	O	O	O
	Check for coolant leak	O	O	O	O
	Check hoses for deterioration		O	O	O
	Check radiator cap for condition and Installation		O	O	O
	Clean and change coolant			●	● (each 2 years for LL.)
	Check fan belt for tension and damage	O	O	O	O

POWER TRAIN

Checking Item	Service Required	Daily	Monthly (100 hrs)	Semiannually (600 hrs)	Annually (1200 hrs)
Torque Converter Trans mission	Check for oil leaks.	O	O	OO	O
	Check for oil level.		O	● (for 1st time only)	●
	Check change lever for operation and looseness		O	O	O
	Check control valve and clutch for proper operation.	O	O	O	O
	Check inching valve for proper operation.	O	O	O	O
	Check inching pedal for free travel and pedal travel	O	O	O	O
	Replace line filter element.				●
Front Axle	Check for oil leak.	O	O	O	O
	Check for oil level.		O	● (for 1st time only)	●
	Check mounting bolts for looseness.		O	O	O

WHEELS

Checking Item	Service Required	Daily	Monthly (100 hrs)	Semiannually1600 hrs)	Annually (1200 hrs)
Tires	Check for cracks or damage.	O	O	O	O
	Check for tread wear.		O	O	O
	Check for undue wear.	O	O	O	O
	Check for spikes, stones, or foreign matter.		O	O	O

Checking Item	Service Required	Daily	Monthly (100 hrs)	Semiannually (600 hrs)	Annually (1200 hrs)
Tire Fastners	Check for looseness.	O	O	O	O
	Check for damage.	O	O	O	O
Rim	Check rim, and disk wheel for damage.	O	O	O	O
Wheel Bearing	Check for looseness.		O	O	O
	Check for noise.		O	O	O
Axle	Check axle for deformation, cracks or damage.		O	O	O

STEERING SYSTEM

Checking Item	Service Required	Daily	Monthly (100 hrs)	Semiannually (600 hrs)	Annually (1200 hrs)
Steer Handwheel	Check for peripheral play.	O	O	O	O
	Check for vertical looseness.	O	O	O	O
	Check for sideways looseness.	O	O	O	O
	Check for proper operation.	O	O	O	O
Steering Gear Box	Check mounting bolts for looseness.		O	O	O
Rod, Arm,	Check for looseness.		O	O	O
etc	Check for deflection, damage, or undue wear.		O	O	O
Knuckle Rear Axle	Check king pins for looseness or damage.		O	O	O
	Check for deflection, deformation, cracks or damage.		O	O	O
	Check for mounting condition.		O	O	O
Power Steering	Check for operation.	O	O	O	O
	Check for oil leaks.	O	O	O	O
	Check for mounting parts and joints for looseness.		O	O	O

BRAKE SYSTEM

Checking Item	Service Required	Daily	Monthly (100 hrs)	Semiannually (600 hrs)	Annually (1200 hrs)
Brake Pedal	Check for free travel	O	O	O	O
	Check for pedal travel.	O	O	O	O
	Check for proper operation.	O	O	O	O
	Check for air mixed in brake piping		O	O	O
Parking Brake Lever	Check that lever Is securely locked and has sufficient lever stroke.	O	O	O	O
	Check for proper operation	O	O	O	O
	Check ratchet for wear or damage				O
	Check for proper operation of ratchet.				O
Rod, Cable, etc	Check for operation.		O	O	O
	Check connections for looseness.		O	O	O
Hoses and Pipes	Check for damage, leakage or collapse.		O	O	O
	Check for loose connections or clamping parts.	O	O	O	O
Brake Master Cylinder, Wheel Cylinder	Check for fluid leaks.		O	O	O
	Check for fluid level and add, if needed.	O	O	O	●
	Check master cylinder and wheel cylinders for proper operation.				O
	Check master cylinder and wheel cylinders for fluid leaks or damage.				O
	Check master cylinder piston cup, and check valve for wear or damage. Change.				●
			O	O	O
Brake Drum & Brake Shoe	Check drum mounting part for looseness.				O
	Check lining for wear.				O
	Check brake shoes for proper operation.				O
	Check anchor pin for rust.				O
	Check return spring for deterioration				O
	Check automatic clearance adjuster for operation				O
	Check drum for wear or damage.				O

BRAKE SYSTEM

Checking Item	Service Required	Daily	Monthly {100 hrs)	Semiannually (600 hrs)	Annually (1200 hrs)
Back Plate	Check back plate for deformation				O
	Check for cracks				O
	Check mounting parts for looseness.				O

LOADING SYSTEM

Checking Item	Service Required	Daily	Monthly (100 hrs)	Semiannually(600 hrs)	Annually (1200 hrs)
Fork	Check forks for damage, deformation or wear.	O	O	O	O
	Check for stopper pins for damage or wear.			O	O
	Check fork base and hook weldings for defective cracks or wear.		O	O	O
Mast & Lift Bracket	Check cross members on outer and inner.		O	O	O
	masts for defective weld, cracks or damage.		O	O	O
	Check tilt cylinder bracket and mast for defective weld, cracks or damage.		O	O	O
	Check outer and Inner masts for defective weld, cracks or damage.		O	O	O
	Check for defective weld, cracks or damage of lift bracket.		O	O	O
	Check roller bearings for looseness.		O	O	O
	Check mast support bushings for wear or damage.				O
	Check mast support cap bolts for looseness.		O (for 1st time only)	O	O
	Check rollers, roller pins and welded parts. for cracks or damage.		O	O	O

LOADING SYSTEM

Checking Item	Service Required	Daily	Monthly (100 hrs)	Semiannually (600 hrs)	Annually (1200 hrs)
Chains & Sheave	Check chains for tension, deformation, damage or rust.	O	O	O	O
	Lubrication of chains.		O	O	O
	Check connection of chain anchor pin and chain for looseness.		O	O	O
	Check sheaves for deformation or damage.		O	O	O
	Check sheave bearings for looseness.		O	O	O
Optional Attachment	Perform general inspection.		O	O	O
Cylinders	Check piston rod, rod screw and rod end for looseness, deformation or damage.	O	O	O	O
	Check cylinders for proper operation.	O	O	O	O
	Check for oil leaks.	O	O	O	O
	Check pins and cylinder bushings for wear or damage.		O	O	O
Hydraulic Pump	Check hydraulic pump for oil leaks or noise.	O	O	O	O
	Check pump drive gear for wear.		O	O	O

HYDRAULIC SYSTEM

Checking Item	Service Required	. Daily	Monthly (100 hrs)	Semiannually (600 hrs)	Annually (1200 hrs)
Hydraulic Reservoir	Check for oil level. Change oil.	O	O	O	●
	Clean suction strainer. Drain foreign matter.			O	O
Return Filter	Replace return filter.				●
Control Lever	Check levers for looseness at link.	O	O	O	O
	Check for proper operation.	O	O	O	O

HYDRAULIC SYSTEM

Checking Item	Service Required	Daily	Monthly (100 hrs)	Semiannually (600 hrs)	Annually (1200 hrs)
Control Valve	Check for oil leaks.	○	○	○	○
	Check relief valve and tilt lock valve for proper operation.		○	○	○
	Measure relief pressure.			○	○
Hose, Piping Hose Reel & Swivel Joint	Check for oil leaks, looseness, collapse deformation and damage.	○	○	○	○
	Change hoses				● (every 2 years)

ELECTRICAL

Checking Item	Service Required	Daily	Monthly (100 hrs)	Semiannually (600 hrs)	Annually (1200 hrs)
Ignition Device (for gasoline truck)	Check distributor cap for crack.			○	○
	Check breaker arm and contact point for condition.			○	○
	Check spark plug for burn.				○
	Adjust spark plug clearance.			○	○
	Clean spark plug.			○	○
	Check distributor cap high-voltage cord for installation.				○
	Check distributor segment for burn.				○
	Check distributor center piece for wear or damage.				○
	Check for breaker arm point clearance.			○	○
	Apply grease on shaft, cam heel and breaker fulcrum.			○	○
	Check high-voltage cord for breakage.				○

ELECTRICAL

Checking Item	Service Required	Daily	Monthly (100 hrs)	Semiannually (600 hrs)	Annually (1200 hrs)
Starter	Check pinion gear for correct engagement.			○	○
Charger	Check charger for proper operation.			○	○
Battery	Check battery electrolyte level. Clean battery.		○	○	○
	Check specific gravity of electrolyte.			○	○
Wiring	Check wire harness for damage and clamps for looseness.		○	○	○
	Check connections for looseness			○	○

SAFETY APPARATUS & ACCESSORIES

Checking Item	Service Required	Daily	Monthly (100 hrs)	Semiannually (600 hrs)	Annually (1200 hrs)
Overhead Guard & Load Backrest	Check for tight installation.	○	○	○	○
	Check for deformation, cracks or damage.	○	○	○	○
Horn	Check for proper operation and tight installation.	○	○	○	○
Lights & Lamps	Check for proper operation and tight installation.	○	○	○	○
Meters	Check meters for proper operation.	○	○	○	○

4-1-1 SERVICE DATA AND SPECIFICATIONS

Valve clearance mm (in)

Hot	Intake	0 38 (0 015)
	Exhaust	

Fan belt deflection mm/kg (in/lb)..... 8 to 1 210 (0 31 to 0.47/22)
Compression pressure
Standard value kg/cm2 (psi) at rpm..... 11 0 (15)/300
Difference between individual cylinders kg/cm2 (psi) at rpm..... Less than 1.0 (14)/300
Vacuum pressure mmHg (inHg) ..... -430 (-16 93)
Battery specific gravity

	Permissible value	Fully charged value (at 200C, 680F)
Frigid climates	Over 1.22	1 28
Tropical climates	Over 1 18	1.23
Other climates	Over 1.20	1 26

Ignition timing (B T D C /rpm .....8° / 650 - H20PU240
Distributor
Point gap mm (n) .....045 to 0 55 (0 018 to 0 022)
Dwell angle degree .....49° to 55°
Spark plug gap mm (in) .....0 7 to 0 8 (0.028 to 0.031)
Governor
Maximum engine speed under no load rpm.....2950 to 3080 - H20PU240
Maximum engine speed under load rpm.....2.800 to 3.000
Oil capacity of engine (including oil filter) liters (US qt, Imp qt).....4 2 (4A , 3 4)
Cooling system
Testing pressure of radiator cap kg/cm2 (psi) 0 9 (13)
Testing pressure of cooling system kg/cm2 (psi) 1.6 (23)
Water capacity liters (US qt, Imp qt).....8 5 (9, 7)
Tightening torque.
Cylinder head stud bolts kg-m (ft-lb) .....8.0 to 9.5 (59 to 69)
Manifold bolts and nuts
Intake & exhaust kg-m (ft-lb) ..... 1.4 to 1.8 (10 to 13)
Spark plug kg-m (ft-lb) .....1.8to 2 4 (13 to 17)
Engine mounting center bracket-to-body bolt .....kg-m (ft-lb) 7 5to 9 5 (54 to 69)
Engine mounting upper bracket-to-engine bolt kg-m (ft-lb) .....4.0 to 5.0(29 to 36)
engine bolt
Engine mounting insulator bolt kg-m (ft-lb) .....8.0 to 10.0 (58 to 72)

4-1-2 TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
CANNOT CRANK ENGINE OR SLOW CRANKING	Improper grade oil	Replace with proper grade oil.
	Discharged battery.	Charge battery.
	Faulty battery.	Replace
	Loose fan belt	Adjust
	Trouble in charge system.	Inspect.
	Wiring connection trouble in starting circuit.	Correct.
	Faulty starter switch.	Repair or replace.
	Faulty starter motor.	Repair or replace

(Trouble-shooting procedure on starting circuit)
Switch on the starting motor with light "ON"

When light goes off or dims considerably.

a. Check battery
b. Check connection and cable.
c. Check starter motor

When light stays bright.

a. Check wiring connection between battery and starter motor
b. Check starter switch.
c. Check starter motor.

ENGINE WILL CRANK NORMALLY BUT WILL NOT START

In this case, the following may exist, but in many cases ignition system or fuel system could be defective.

Ignition system trouble
Fuel system trouble
Valve mechanism does not work properly
Low compression

(Trouble-shooting procedure)
Check spark plug first by following procedure.
Disconnect high tension cable from one spark plug and hold it about 10 mm (0.4 in) from the engine metal part and crank the engine.

If good spark occurs.

a. Check spark plug.
b. Check ignition timing.
c. Check fuel system.
d. Check cylinder compression

If no spark occurs — Check the current flow in primary circuit.

Very high current. — Inspect for shorted primary circuit. Check breaker point operation.

Condition	Probable cause	Corrective action
	Low or no current	Check for loose terminal or disconnection in. primary circuit. Check for burned points.
Ignition trouble	Burned distributor point	Repair or replace.
	Improper point gap	Adjust.
	Faulty condenser	Replace.
	Leak at rotor cap and rotor	Clean or replace.
	Faulty spark plug	Clean, adjust plug gap or replace.
	Improper ignition timing	Adjust.
	Faulty ignition coil	Replace.
	Disconnection of high tension cable	Replace.
	Loose connection or disconnection in primary circuit	Repair or replace.
Fuel system trouble	Lack of fuel	Supply.
	Dirty fuel strainer	Replace.
	Dirty or clogged fuel pipe	Clean.
	Fuel pump will not work properly	Repair or replace.
	Carburetor choke will not work properly	Check and adjust.
	Improper adjustment of float level	Correct.
	Improper Idling	Adjust.
	Dirty or clogged carburetor	Disassemble and clean.
	Clogged breather pipe of fuel tank.	Repair and clean.
Low compression	Incorrect spark plug tightening or damaged gasket..	Tighten to normal torque or replace gasket.
	Improper grade engine oil or low viscosity.	Replace with proper grade oil.
	Incorrect valve clearance	Adjust.
	Compression leak from valve seat	Remove cylinder head and lap valves.
	Sticky valve stem	Correct or replace valve and valve guide.
	Weak or defective valve springs	Replace valve springs.
	Compression leak at cylinder head gasket	Replace gasket.
	Sticking or worn piston ring.	Replace piston rings.
	Worn piston ring or cylinder	Overhaul engine.
(Trouble shooting procedure) Pour engine oil into plug hole, and then measure cylinder compression		
Compression increases.		Trouble in cylinder or piston ring
Compression does not change.		Compression leaks from valve, cylinder head or head gasket

Condition	Probable cause	Corrective action
IMPROPER ENGINE IDLING		
Fuel system trouble	Clogged or damaged carburetor jets	Clean or replace
	Incorrect idle adjustment	Adjust
	Clogged air cleaner.	Replace element
	Damaged manifold gaskets or carburetor insulator	Replace gasket or insulator
	Improper float level adjustment	Adjust
Low compression	Previously mentioned	
VALVE ADJUSTMENT	Incorrect valve clearance	Adjust
	Extremely low revolution	Adjust
ENGINE POWER BELOW NORMAL		
Low compression		Previously mentioned
Ignition system trouble	Incorrect ignition timing	Adjust
	Faulty spark plugs.	Clean, adjust or replace plugs.
	Burnt distributor points	Dress, or replace points Also check condenser
Fuel system trouble	Malfunction of choke system	Adjust
	Clogged fuel pipe or floating valve	Clean
	Dirty or clogged fuel strainer	Replace
	Fuel pump will not work properly	Repair or replace
	Clogged carburetor jets	Disassemble and clean
	Throttle valve does not open fully.	Readjust
	Fuel pump out of adjustment	Readjust
Air intake system trouble	Clogged air cleaner.	Replace element.
	Air leak from manifold gasket or carburetor gasket	Replace gasket
Overheating	Insufficient coolant.	Replenish
	Loose fan belt.	Adjust fan belt.
	Worn or loose fan belt.	Replace
	Faulty thermostat.	Replace.
	Faulty water pump.	Replace
	Clogged or leaky radiator.	Flush, repair or replace

Condition	Probable cause	Corrective action
	Faulty radiator filler cap	Replace
	Air in cooling system	Retighten each part of cooling system.
	Improper engine oil grade	Replace with proper grade oil
	Incorrect Ignition timing	Adjust
	Faulty carburetor (lean mixture)	Overhaul carburetor.
Overcooling	Damaged thermostat	Replace
FUEL GRADE	Improper octane fuel	Replace with specified octane fuel.
BRAKE SYSTEM	Dragging brake	Adjust
NOISY ENGINE		
Knocking		
	Carbon knocking	Disassemble cylinder head and remove carbon
	Timing knocking	Adjust ignition timing
	Fuel knocking	Use specified octane fuel.
	Preignition (misusing of spark plug)	Use specified spark plug.
Mechanical knocking		
Crankshaft bearing knocking	This strong dull noise increases when engine is accelerated To locate the possible origin, cause a misfire on each cylinder. If the noise stops by the misfire. this cylinder generates the noise.	This may cause an abnormal wearing of cylinder and lower compression which in turn will cause lower out-put power and excessive consumption of oil
Connecting rod bearing knocking	This is a little higher-pitched noise than the crankshaft knocking, and also increases when engine is accelerated Cause a misfire on each cylinder and if the noise diminishes almost completely, thus crankshaft bearing generates the noise	Same as the case of crankshaft bearings.
Piston and cylinder noise	When you hear an overlapping metalic noise which increases its magnitude with the revolution of engine and which decreases as engine Is warmed up, this noise is caused by piston and cylinder To locate the place, cause a misfire on each cylinder	This may cause an abnormal wearing of cylinder and lower compression which in turn will cause a lower out-put power and excessive consumption of oil. Overhaul engine,
Piston pin noise.	This noise is heard at each highest and lowest dead end of piston To locate the place, cause a misfire on each cylinder	This may cause a wear on piston pin, or piston pin hole Renew piston and piston pin assembly.
Water pump noise	This noise may be caused by worn or damaged bearings, or by the uneven surface of sliding parts	Replace water pump with a new one

Condition	Probable cause	Corrective action
VALVE ADJUSTMENT	An Improper adjustment of valve clearance Noise of timing chain An excessive end-play on crankshaft	Adjust Adjust the tension or chain Disassemble engine and renew main bearing
ABNORMAL COMBUSTION (back fire, after fire run-on etc)		
Improper ignition timing	Improper Ignition timing Improper heat range of spark plugs	Adjust ignition timing Use specified spark plugs
Fuel system trouble	Damaged carburetor or manifold gasket (back fire, after fire) Faulty carburetor jet Improper function of the float Uneven idling (Run on)	Replace them with new parts Disassemble carburetor and check it Adjust the level, and check needle valve Adjust
Defective cylinder head, etc.	Improperly adjusted valve clearance Excess carbon in combustion chamber Damaged valve spring (back fire, after fire)	Adjust Remove head and get rid of carbon Replace it with a new one
EXCESSIVE OIL CONSUMPTION		
Oil leakage	Loose oil drain plug Loose or damaged oil pan gasket Loose or damaged chain cover gasket Damaged oil seal in front and rear of crankshaft Loose or damaged rocker cover gasket Improper tightening of oil filter Loose or damaged oil pressure switch	Tighten it Renew gasket or tighten It Renew gasket or tighten it Renew oil seal Renew gasket or tighten it Renew gasket and tighten it with the proper torque Renew oil pressure switch or tighten It
Excessive oil consumption	Cylinder and piston wear Improper location of piston ring gap or reverse assembly of piston ring . Damage piston rings	Overhaul cylinder and renew piston Remount piston rings Renew rings Repair or renew piston and cylinder

Condition	Probable cause	Corrective action
	Worn piston ring groove and ring	Renew piston and piston ring
	Fatigue of valve oil seal lip	Replace seal lip with a new one
	Worn valve stem	Renew valve or guide
OIL LEVEL	Inadequate quality of engine oil	Use the designated oil
	Engine overheat	Previously mentioned
POOR FUEL ECONOMY		
See the explanation of the power decrease		
FUEL SYSTEM	Exceeding idling revolution	Adjust It to the designated rpm
	Faulty acceleration recovery	Adjust It
	Fuel leakage	Repair or tighten the connection of fuel pipes
TROUBLE IN OTHER FUNCTIONS		
Decreased oil pressure	Inadequate oil quality	Use the designated oil
	Overheat	Previously mentioned
	Faulty function of oil pump regulator valve	Disassemble oil pump and repair or renew it
	Functional deterioration of oil pump	Repair or replace It with a new one,
	Blocked oil filter	Renew It
	Increased clearance in various sliding parts	Disassemble and replace the worn parts with new ones
	Blocked oil strainer	Clean it
	Troubles In oil gauge pressure switch	Replace it with a new one
Excessive wear on the sliding parts	Oil pressure decreases	Previously mentioned
	Faulty quality or contamination of oil	Change to the designated oil and change oil filter.
	Insufficient air cleaner.	Check element
	Overheat or overcool	Previously mentioned
	Improper fuel mixture	Check the fuel system
Scuffing of sliding parts	Decrease in oil pressure	Previously mentioned
	Insufficient clearances	Readjust to the designated clearances
	Overheat	Previously mentioned
	Improper fuel mixture.	Check the fuel system

4-1-3 ENGINE TUNE-UP

4-1-3-1. DESCRIPTION

To restore power and performance that has been lost through wear, corrosion, or deterioration, periodic maintenance (engine tune-up) is necessary.

It is Important that the engine tune-up be done accurately according to the maintenance schedule shown in section four (4) of this manual.

This chapter describes actual operating procedures for the maintenance operation of items to be inspected.

4-1-3-2. BASIC MECHANICAL SYSTEM

(1) RETIGHTENING CYLINDER HEAD BOLTS, MANIFOLD BOLTS AND NUTS

Cylinder head bolts and valve rocker shaft bracket bolts:

When the engine is cold, tightening should be made In several steps and in the sequence shown in Fig. 1-1. starting with the center and moving toward the ends.

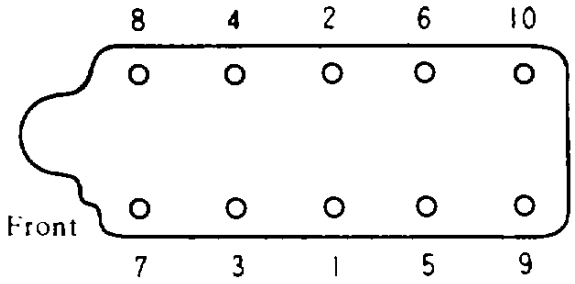


Fig. 4-1. Tightening Sequence of Cylinder Head Bolts.

Tightening torque:
Cylinder head bolts
8.0 to 9.5 kg-m
(59 to 69 ft-lb)

When the engine is warm, tighten the bolts and nuts to a torque of 0.5 kg-m (3.6 ft-lb) higher than the specifications shown above

Intake and exhaust manifold bolts and nuts should be tightened to the specified torque, shown below.

Tightening torque:
Intake and exhaust manifold
1.4 to ;.8 kg-m
(10 to 13 ft-lb)

(2) ADJUSTING INTAKE AND EXHAUST VALVE CLEARANCES

Valve clearance adjustment should be made while engine is not running.

To adjust. proceed as follows

(1) Start engine and run it until it is heated to operating temperature. or at least, more than 80 C (176° F). then stop engine.

(2) Rotate crankshaft to bring No. 1 cylinder to top dead center on its compression stroke. (Number 1 cylinder is the one closest to the fan).

(3) Remove al e rocker cover to gain access to valve operating mechanism.

Adjust valve clearance at the following four points while engine is still hot.

a. Exhaust valve of No. 1 cylinder (l)
b. Intake valve of No. 1 cylinder (2)
c. Intake valve of No. '2 cylinder (3)
d. Exhaust valve of No. 3 cylinder (5)

Note: Encircled numbers agree with those in accompanying sketch.

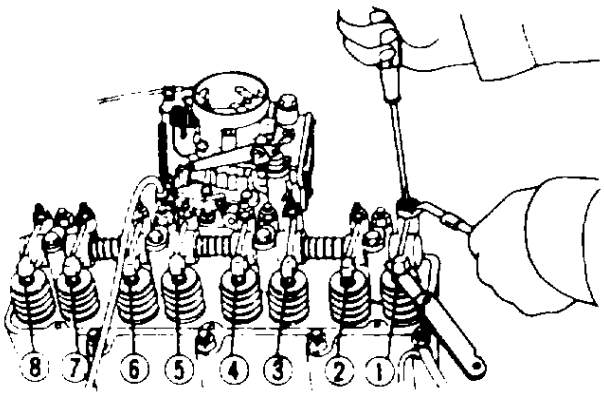


Fig. 4-2. Adjusting Valve Clearance.

(4) Rotate crankshaft one complete turn so that the No. 4 piston is on top dead center of its compression stroke. Adjust the following valves:

e. Exhaust valve of No. 2 cylinder (4)
f. Intake valve of No. 3 cylinder (6)
g. Intake valve of No. 4 cylinder (7)
h. Exhaust valve of No. 4 cylinder (8)

Adjustment should be made whole engine Is hot. After all valves have been adjusted correctly, tighten lock nut firmly to secure the adjustment.

Valve clearance

Hot	Intake	0.38 mm (0.015 in)
	Exhaust	

(3) CHECKING AND ADJUSTING FAN BELT

With the engine switched off and the hood up, push the belt gently downward. You should be able to depress it about 10 mm (1/2 in) midway between fan pulley and alternator pulley by a force of 10 kg (22 lb). If the fan belt has become slack through wear, loosen the fixing and adjusting bolts, and move the alternator away from the engine. Thus will eliminate the slack. Tighten the bolts again, and make sure that the belt has been tightened correctly. If tightened excessively it will wear rapidly and also overload the water pump and alternator bearings.

Fan belt deflection:
8 to 12 mm
(0.31 to 0.047 in)

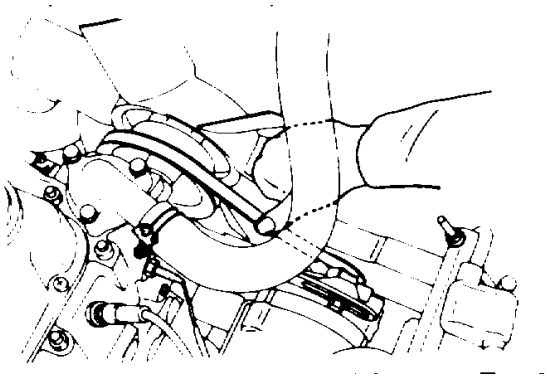


Fig. 4-3. Adjusting Pan Belt Tension.

(4) CHECKING ENGINE ATTACHING PARTS

Check engine mounting, carburetor, alternator, starter, fuel pump and distributor for looseness. If necessary, tighten.

Tightening torque:
Engine mounting center bracket-to-body bolt
7.5 to 9.5 kg-m
(54 to 69 ft-lb)
Engine mounting upper bracket-to-engine bolt
4.0 to 5.0 kg-m
(29 to 36 ft-lb)
Engine mounting insulator bolt
8.0 to 10.0 kg-m
(58 to 72 ft-lb)

(5) CHECKING ENGINE COMPRESSION

Note: If this test is to be performed. it should be done when all plugs are removed for service during basic tune-up procedure.

Unless check is made for worn rings or for the cause of low speed, compression check should not be necessary.

Fig. 4-4. Testing Compression Pressure.

Test compression with engine warm, all spark plugs removed and throttle and choke opened. No cylinder compression should be less than 80% of highest cylinder's. Excessive variation between cylinders, accompanied by low speed missing of the cylinder or cylinders which are low, usually indicates a valve not properly seating or a broken piston ring. Low pressures, even though uniform, may indicate worn rings. This may be accompanied by excessive oil consumption.

Test conclusion

If one or more cylinders read low, inject about one tablespoon of engine oil on top of the pistons with low reading cylinders through the spark plug port. Repeat compression check on these cylinders.

(1) If compression improves considerably, piston rings are faulty.
(2) If compression does not improve, valves are sticking or not seating properly.
(3) If two adjacent cylinders indicate low compression and injecting oil on pistons does not increase compression, the cause may be a cylinder head gasket leak between the cylinders.
Engine oil and coolant in cylinder could result from this problem.

Compression pressure:
11.0 kg/cm2 (156 psi)
at 300 rpm
Difference between individual cylinders:
Less than 1.0 kg/cm2
(14 psi) at 300 rpm

(6) MEASURING SUCTION (VACUUM PRESSURE)

(1) Replace elbow connector (for vacuum pressure) on intake manifold suction (vacuum) plug hole with a nipple (for measurement).
(2) Install a vacuum gauge on nipple.
(3) Operate engine at Idling speed and measure suction (vacuum pressure).

Standard value:
-43 mmHg (-16.93 inHg)
or higher

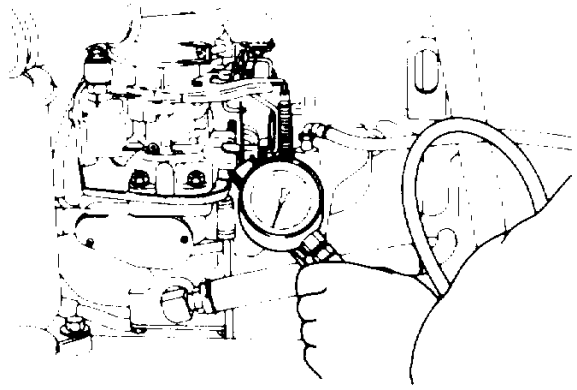


Fig. 4-5. Measuring Suction (Vacuum pressure).

(7) LUBRICATING ACCELERATOR LINKAGE

Apply a light coat of multipurpose grease to all sliding or friction surfaces except ball joints. The entire linkage should be inspected whether or not the acceleration pedal returns to normal height smoothly when releasing It. This test should be made with engine running Added care should be taken in checking items that affect proper linkage function.

(8) CHECKING GOVERNOR OPERATION

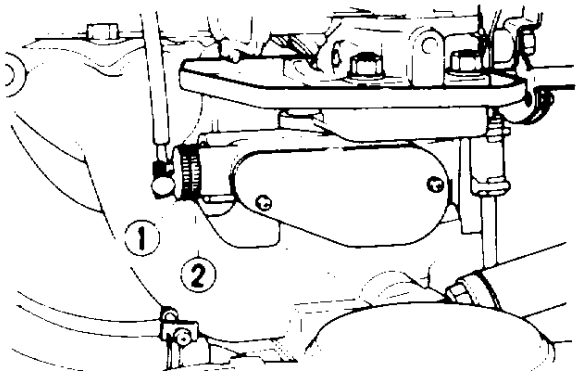
Check maximum engine speed under no load as follows:

(1) Shift transmission gears into neutral.
(2) Run engine and set carburetor throttle valve at fully-open position. Check engine rpm.

Maximum engine speed
Under no load:

2950 to 3080 rpm H20PU240

(3) If engine speed is not within specified range, adjust it by turning governor adjusting screw handle.



1 Adjusting screw handle
2 Adjusting spring handle

Fig. 4-6.

Check maximum engine speed under load as follows:
(1) Shift transmission gears into neutral. Run engine with mast assembly tilted fully backward with hydraulic control lever.
(2) With carburetor throttle valve at fully-open position, check engine rpm.

Maximum engine speed
under load:
2,800 to 3,000 rpm

(3) If engine speed is not within specified range, adjust It by turning governor adjusting spring handle.
Also adjust maximum engine speed under no load.

4-1-3-3. IGNITION SYSTEM

(1) CHECKING BATTERY

WARNING

The electrolyte in the battery is a sulfuric acid solution. Be careful not to drip electrolyte on you or equipment. If electrolyte spills on you, splash affected areas with water to flush electrolyte. Get medical attention at once.

CAUTION

Never allow flame or sparks near the battery filler holes. Explosive hydrogen gas may be present.
Engine must be shut down when filler ports are open.

Check the electrolyte level in each battery cell.

	Permissible value	Fully charged value (at 20°C, 68°F)
Frigid climates	Over 1.22	1.28
Tropical climates	Over 1.18	1.23
Other climates	Over 1.20	1.26

Clean the top of battery and terminals with a solution of baking soda. The top of the battery must be clean to prevent current leakage between terminals and from positive terminal to hold-down clamp.
In addition to current leakage, prolonged accumulation of acid and dirt on the top of the battery may cause corrosion of straps. After tightening terminals, coat them with petrolatum (vaseline) to protect them from corrosion.

(1) Unscrew each filler cap and inspect fluid level. If the fluid is low. add distilled water to bring the level up approximately 10 to 20 mm (0.39 to 0.79 in) above the plates. Do not overfill.

(2) Measure the specific gravity of battery electrolyte before adding distilled water.

(2) CHECKING DISTRIBUTOR BREAKER POINT

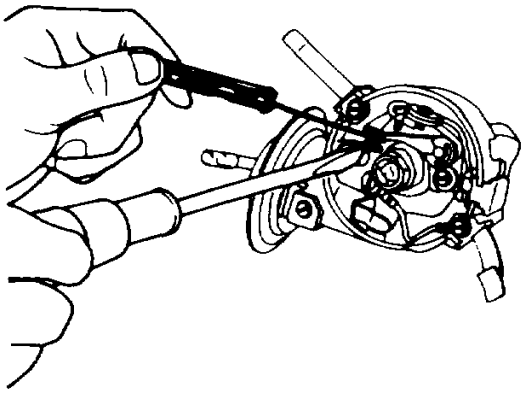


Fig. 4-7. Checking Distributor Point Gap

Remove distributor cap and inspect points for excessive burning or pitting. Replace points if necessary. Use a point file to clean contact area and remove scale from points. Adjust distributor point gap. Filing is for cleaning purposes only. Do not attempt to remove all roughness. Adjust distributor dwell angle on all engines.

Distributor point gap:
0.45 to 0.55 mm
(0.018 to 0.022 in)
Dwell angle:
49° to 55°

(3) CHECKING AND ADJUSTING IGNITION TIMING

With distributor vacuum line disconnected and lift truck operating at normal idle speed or below, set ignition timing.

The timing can be observed by the stationary pointer at front cover and the grooves on crankshaft pulley with a device called a stroboscopic light (also referred to as a timing light).

Note that the pulley groove is graduated 5° per scale division in terms of the crank angle. The top dead center is located to the extreme left as viewed from the inspector's side.

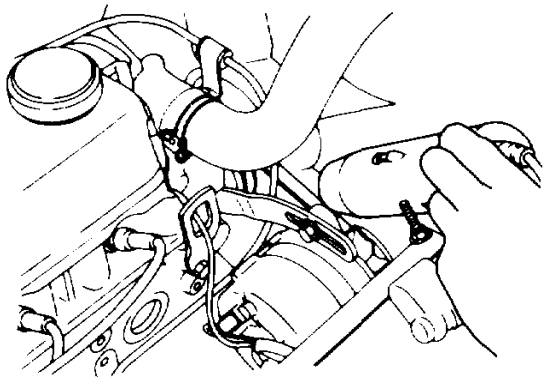


Fig. 4-8. Checking Ignition Timing

Adjust the timing to specifications, by turning distributor body after loosening the securing bolt.

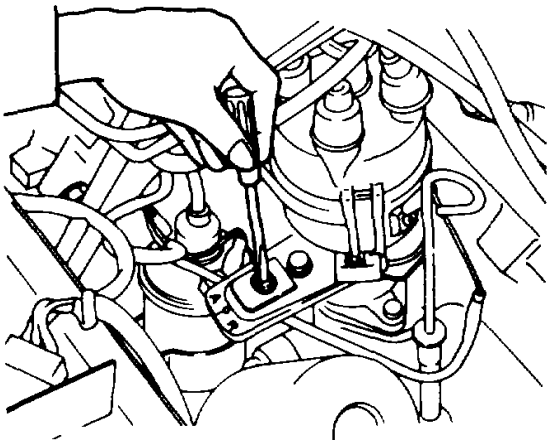


Fig. 4-9. Adjusting Ignition Timing

Ignition timing (B.T.D.C./rpm):
8°/650... H20PU240

(4) CHECKING OR REPLACING SPARK PLUGS

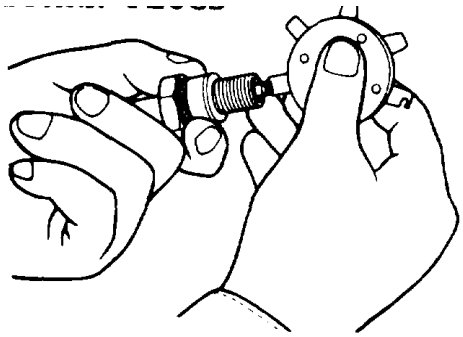


Fig. 4-10. Checking Spark Plug Gap.

1. See that correct spark plugs are used. Spark plug insulators should be thoroughly cleaned to prevent possible flash-over.
2. Thoroughly clean lower insulator and cavity by blast type cleaner. File both electrodes flat (rounded surfaces increase voltage required to fire plugs) and set gap. Tighten plugs to specified torque.

(5) CHECKING AND CLEANING HIGH TENSION WIRES, DISTRIBUTOR CAP AND ROTOR

WARNING

Dry cleaning solvent P-D-6XO is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area Avoid contact with skin, eyes, and clothes and don't breathe vapors. Do not use near open flame or excessive heat If you become dizzy while cleaning with solvent, get fresh air immediately land get medical aid. If contact with skin or clothing is made, flush with water. If contact with eyes is made, slash sour eyes with water and get medical aid immediately.

External surfaces of all parts of secondary system must be cleaned to reduce possibility of voltage loss. All wires should be removed from distributor cap and coil so that terminals can be inspected and cleaned. Burned or corroded terminals indicate that wires were not fully seated, which causes arcing between end of wire and terminal. When replacing wires in terminal, be sure they are fully seated before pushing rubber nipple down over tower. Check distributor rotor for damage, and distributor cap for cracks.

(6) GREASING DISTRIBUTOR SHAFT AND CAM HEEL

Clean and apply multi-purpose grease to cam and wick.

Note: Do not apply grease excessively.

4-1-3-4. AIR CLEANER FILTER (DRY TYPE)

WARNING

Compressed air used for cleaning purposes will not exceed 30 PSI. Use only with effective hip guarding and personal protective equipment (goggles/shield, gloves, etc.).

It is necessary to clean the element or replace it at the recommended interval, more often under dusty driving conditions.

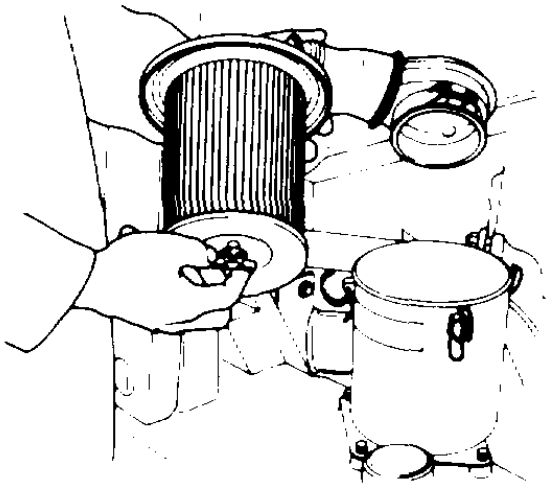


Fig. 4-11. Replacing Air Cleaner Filter

(2) REPLACING FUEL FILTER

Check for a contaminated element, and water deposit.

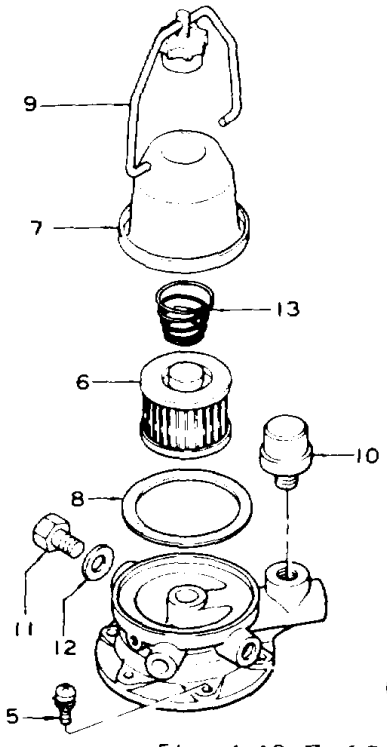


Fig. 4-12. Fuel Strainer

This engine uses a cartridge type strainer, so if a malfunction is detected. replace filter element #6 In the above figure.

(3) CHECKING THROTTLE VALVE AND CHOKE VALVE

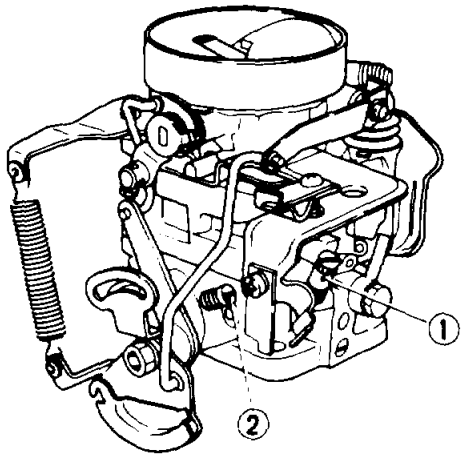
(1) Check throttle valve shaft for wear. Make sure that there is no play of throttle lever by moving it. Replace throttle valve shaft if it is worn excessively.

(2) Check opening and closing of throttle valve and choke valve. Choke valve should close fully when choke lever is pulled all the way. Choke valve should open fully when choke lever is released. If any malfunction is found, adjust wire.

(3) Check choke interlocking mechanism. (For details, refer to Section 5.)

(4) ADJUSTING CARBURETOR-IDLE RPM MIXTURE RATIO

The idle adjustment is made by the throttle adjusting screw and the idle adjusting screw after the engine is warmed up.



1. Idle adjusting screw
2. Throttle adjusting screw

Fig. 4-13. Idling Adjustment

(1) Check if engine idle speed is at specified value.

(2) Using a suitable screwdriver. turn out idle adjusting screw approximately two or three turns. starting from fully closed position Turn In throttle adjusting screw two or three turns and start engine.

(3) Turn out throttle adjusting screw gently until specified engine Idle speed is approximately obtained.

(4) Turn in or out Idle adjusting screw until engine runs smoothly at the highest speed.

(5) out throttle adjusting screw until specified engine speed is obtained.

(6) Readjust idle adjusting screw until engine runs smoothly at the highest speed (with the highest vacuum reading).

(7) Then throttle adjusting screw must be adjusted so that engine speed is 20 rpm faster than specified.

(8) Finally, turn In idle adjusting screw until specified engine speed is attained.

WARNING

Carbon monoxide gas is a colorless, odorless, poisonous, deadly gas produced by incomplete combustion of any carbon containing material. It occurs in the exhaust fumes of fuel burning internal combustion engines, and becomes dangerously concentrated under conditions of inadequate ventilation.

Note:

a. Items (7) and (8): Best method to reduce carbon monoxide in exhaust emission.
b. Do not attempt to screw down the idle adjusting screw completely. It may result in damaging the tip which will tend to cause malfunctions.

(5) CHECKING FUEL LINES (HOSES, PIPINGS,) CONNECTIONS, etc.) FOR LEAKS

Check fuel lines for loose connections, cracks and deterioration. Retighten loose connections; if necessary, replace any damaged or faulty parts.

(6) ACCELERATING PUMP OPERATION

With the engine stopped, open the completely closed throttle valve rapidly to the maximum extent, and check that there is injection from the pump jet.

4-1-3-5 LUBRICANT AND COOLING SYSTEM

(1) REPLACING OIL FILTER

WARNING

Fuel and oil are slippery and can cause falls. To avoid injury, wipe up spilled fuel or oil with rags.

The oil filter is a full-flow cartridge type. The oil filter element is sealed in the container as a unit. It can be easily removed by hand with a filter wrench

(1) Check for oil leaks at packing flange. If any leakage is discovered. tighten a little. or replace oil filter assembly using an oil filter wrench. When installing an oil filter, fasten it to engine block by hand.

(2) The oil filter element should be replaced at recommended intervals.

Note:

a Do not overtighten filter, or oil leakage may occur.

b. When assembling, first oil the seal ring lightly.

(2) CHANGING ENGINE OIL

WARNING

Fuel and oil are slippery and can cause falls. To avoid injury, wipe up spilled fuel or oil with rags.

(1) Check if engine oil has deteriorated by invading cooling water or gasoline. Drain and refill oil, if necessary.

(2) Draining is best done after a good run, when the oil. being thoroughly warm, will flow readily and freely and any foreign matter will be held in suspension.

Place a large bowl or other shallow container under the engine. Then remove the oil pan drain plug. Do this carefully, as the oil will be hot and it will spun out with some force. After completely draining the dirty oil. securely replace the oil drain plug and finally refill the engine in the usual way up to the "H" mark on the dipstick. Make sure that the truck is on a level surface while draining and filling the engine.

Note:

a. A milky oil indicates the presence of cooling water.

Discover the cause and make necessary correction.

b. An oil with extremely low viscosity suggests dilution with gasoline.

Discover the cause and make necessary correction.

(3) Check oil level, and if it is below the specified level, add oil of the same grade up to the H level.

Oil capacity of engine (including oil filter):

Maximum (H level)
4.2 liters (41/2 US qt, 3 1/4 Imp qt)

Minimum (L level)
3.5 liters (3314 US qt, 3’/s Imp qt)

(3) CHECKING ENGINE OIL FOR LEAKS

Check cylinder head. front chain cover, oil pan, rocker cover, oil filter gasket, etc. or other parts for sign of leaks past their gasketed surfaces. If necessary, replace gaskets or damaged parts. After maintenance has been done, check the replaced parts for any leaks.

(4) CHANGING ENGINE COOLANT

Scale or sediment accumulated in water jacket or radiator harms heat radiation. Thoroughly flush the system after opening the two drain plugs, (one at the bottom of the radiator and the other at the right side of the cylinder block), until clean water comes out.

Always use clean soft water in the radiator. When the cold season arrives. the cooling system should be protected against freezing by a good anti-freeze solution such as TCM LONG LIFE COOLANT.

To allow for expansion when hot the level, (when cold) should be visible Just below the filler neck. Do not overfill the system. This coolant (L L.C.) should be changed every recommended interval.

(5) CHANGING ENGINE COOLANT (L.L.C.)

L L.C. is an ethylene glycol base product containing chemical inhibitors to protect the cooling system from rusting and corrosion. The L.L.C. does not contain any glycerine, ethyl or methyl alcohol. It will not evaporate or boil away and can be used with either a high or low temperature thermostat. It flows freely, transfers heat efficiently, and will not clog the passages in the cooling system. The L.L.C. must not be mixed with other products. This coolant can be used throughout the seasons of the year.

Whenever any coolant is changed, the cooling system should be flushed and refilled with new coolant. Check the level.

(6) CHECKING COOLING SYSTEM HOSES AND CONNECTIONS FOR LEAKS

Check cooling system hoses and fittings for loose connections and deterioration. Retighten or replace as necessary.

(1) Inspection of radiator cap

Apply reference pressure [0.9 kg/cm2 (13 psi)] to radiator cap by means of a cap tester to see if it is in good condition. Replace cap assembly if necessary.

(2) Cooling system pressure test

WARNING

Do not remove the radiator cap abruptly while the engine is hot.. Turn the cap a little to the left to relieve the pressure in the radiator, then remove the cap. Do not wear gloves when removing radiator cap, a clean thick cloth is recommended.

With radiator cap removed, apply reference pressure 11.6 kg/cm' (23 psi)l to the cooling system by means of a tester to check for leaks of the system components.

Water capacity:
8.5 liters (9 US qt, 71/2 Imp qt)

4-1-3-6 CRANKCASE EMISSION CONTROL SYSTEM

(1) DESCRIPTION

This system is designed to send blow-by gases back to the combustion chamber for reburning, and at the same time to send filtered air into the crankcase for ventilation. Thus, this system serves to prevent the emission of blow-by gases into the atmosphere.

The function of this system depends upon the positive crankcase ventilation (P.C.V.) control valve which returns blow-by gases to the combustion chamber.

Normally, the capacity of the valve is sufficient to handle any blow-by gas and a small amount of ventilating air.

The ventilating air is then drawn from the carburetor air cleaner, through the tube connecting carburetor air cleaner to the rocker cover, into the crankcase.

Under full-throttle condition, the manifold vacuum is insufficient to draw the blow-by flow through the valve, and its flow goes through the tube connection in the reverse direction.

On lift trucks with an excessively high blowby, some of' the flow will. go through the tube connection to the carburetor air cleaner under all conditions.

(2) INSPECTION

(1) **P.C.V. valve**

Check P.C.V. valve in accordance with the following method.

With engine running at idle, remove the ventilator hose from the P.C.V. valve, if the valve is working. a hissing noise will be heard as air passes through the valve and a strong vacuum should be felt immediately if a finger is placed over the valve Inlet.

Replace P.C.V. valve if necessary.

(2) **Ventilation hose**

1. Check hoses and hose connections for leaks.
2. Disconnect all hoses and clean with compressed air.

If any hose is not free of obstructions, replace.

WARNING

Compressed air used for cleaning purposes will not exceed 30 PSI. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

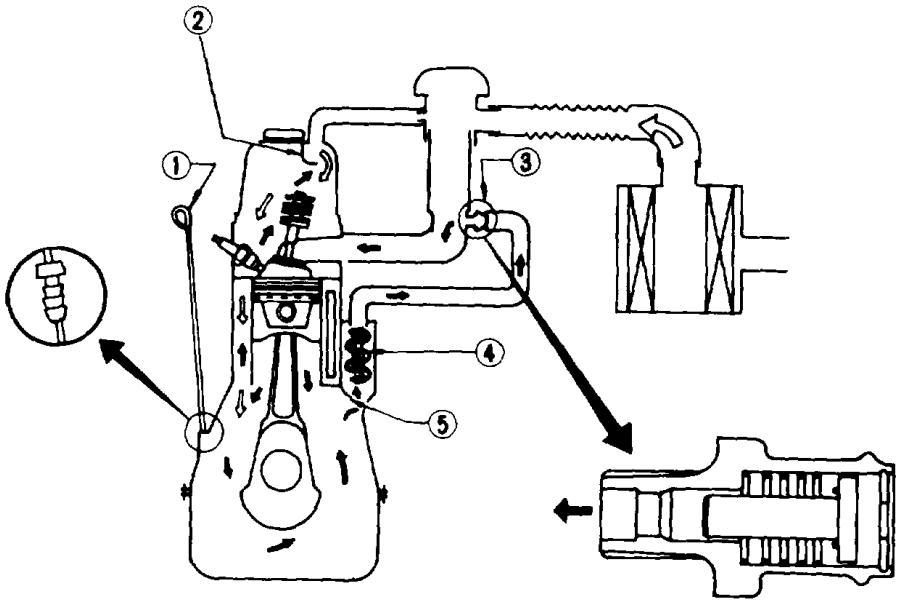


Fig. 4-14. Crankcase Emission Control System

4-2-1 SERVICE DATA AND SPECIFICATIONS

4-2-1-1 GENERAL SPECIFICATIONS

Engine model		H20
Cylinder arrangement		4, min-line
Displacement	cc (cu in)	1,982 (120 9)
Bore x stroke	mm (in)	87.2 x 83 (3 433 x 3 268)
Valve arrangement		O H V.
Firing order		1-3-4-2
Number of piston rings		
Compression		2
Oil		2 + I spacer
Total number of piston rings		5
Compression ratio		8 2 1
Fan belt size	mm (in)	10 x 1,035 (0.39 x 40 75)
Engine idle speed	rpm	650

4-2-1-2 INSPECTION AND ADJUSTMENT

(1) Valve mechanism

Valve clearance (Hot)		
Intake	mm (in)	0.38 (0.015)
Exhaust	mm (in)	0.38(0.015)
Valve head diameter		
Intake	mm (in)	42.0 to 42.2 (1.654 to 1 661)
Exhaust	mm (m)	32 00 to 32 2 (1 260 to 1.268)
Valve length		
Intake	mm (in)	109.05 to 109 365 (4.2933 to 4 3057)
Exhaust	mm (in)	108.9 to 109 365 (4 2874 to 4.3057)
Valve stem diameter		
Intake	mm (in)	8.657 to 8.670 (0 3408 to 0.3413)
Exhaust	mm (in)	8 627 to 8.640 (0 3396 to 0 3402)
Valve spring free length		
Intake and exhaust	mm (in)	49 0 to 47 5 (1.929 to 1 870)
Valve spring pressured length (Valve open)		
Intake and exhaust	mm/kg (in/lb)	39 0/28.5 to31 5 (1.535/62 8 to 69.5)
Valve spring assembled height (Valve closed)		
Intake and exhaust	mm/kg (in/lb)	30 4/60 8 to 61.5 (1 197/134.1 to 135 6)

Valve spring out-of-square		
Intake and exhaust	mm (in)	1.5 (0.059)
Valve guide to stem clearance		
Intake	mm (in)	0.028 to 0 030 (0.0011’ to 0.0012)
Exhaust	mm (in)	0.058 to 0.060 (0.0023 to 0.0024)
Valve seat width		
Intake	mm (in)	1.7 to 1.9 (0.067 to 0.075)
Exhaust	mm (in)	1.7 to 1 9 (0.067 to 0.075)
Valve seat angle		
Intake and exhaust	degree	45°
Valve face angle		
Intake and exhaust	degree	45° 30’’

(2) Camshaft

Camshaft bend limit	mm (in)	0.05 (0.0020)
Camshaft end play	mm (in)	05 to 0.28 (O 0020 to 0.0110)
Camshaft bushing inner diameter standard	mm (In)	
#1	mm (in)	45 472 to 45.485 (1 7902 to 1 7907)
#2, #3	mm (in)	43.948 to 43.961 (1.7302 to 1.7307)
Camshaft journal to bearing clearance		
#1, #3	mm (in)	0 025 to 0.051 (0.0010 to 0.0020)
#2	mm (in)	0.038 to 0 062 (0 0015 to 0.0024)
Camshaft end play	mm (in)	0 O05 to 0 28 (O 0020 to 0.0110)
Camshaft lobe lift		
Intake and exhaust	mm (in)	37 229 to 37 279 (1 4657 to 1 4677)

(3) Crankshaft and main bearing

Journal diameter	mm (m)	62.942 to 62.955 (2.4780 to 2.4785)
Journal taper & out-of-roundness	mm (in)	0.01 (0.0004)
Wear limit	mm (in)	0.03 (0.0012)
Journal oil clearance	mm (in)	0.020 to 0 062 (0.0008 to 0.0024)
Wear limit	mm (in)	0.1 (0.0039)
Crank pin diameter	mm (in)	51 961 to 51.974 (2.0457 to 2.0462)
Crank pin taper out-of-roundness	mm (in)	0.01 (0 0004)
Wear limit	mm (in)	0 03 (0.0012)
Crankshaft free end play	mm (m)	0 5 to 0.18 (0.0020 to 0.0071)
Wear limit	mm (in)	0.2 (0.0079)
Crankshaft bend	mm (in)	Less than 0.02 (0 0008)

Flywheel runout	mm (in).....	Less than 0.1 (0.0039)

(4) Connecting rod

Center distance	mm (in).....	143.97 to 144.03 (5.6681 to 5 6705)
Big end play	mm (in).....	0 17 to 0 3 (0.0067 to 0.0118)
Wear limit	mm (in).....	0 4 (0 0157)
Connecting rod bearing clearance	mm (in).....	0 01 to 0 066 (0.0004 to 0 0026)
Wear limit	mm (in).....	0 03 (0.0012)
Connecting rod bend (per 100 mm or 2 937 in)	mm (in).....	Less than 0 025 (0.0010)

(5) Piston

Piston diameter (Service standard)	mm (in).....	87.165 to 87 215 (3 4317 to 3.4337)
(Service parts)		
0.50 (0.0197) Over size	mm (in).....	87.655 to 87 715 (3 4510 to 3.4533)
1.0 (0.0394) Over size	mm (in).....	88 165 to 88.215 (3.4711 to 3 4730)
Ring to groove clearance		
Top	mm (in).....	0.040 to 0 073 (0.0016 to 0 0029)
Second	mm (in).....	0.030 to 0 063 (0.0012 to 0 0025)
Oil	mm (in).....	0 030 to 0 08 (0.0012 to 0 0031)
Piston ring end gap		
Top	mm (in).....	025 to 0.40 (O 0098 to 0 0157)
Second, Oil	mm (in).....	0 15 to 0 30 (O 0059 to 0 0118)
Pin diameter	mm (in).....	22 013 (0 86671
Piston to bore clearance	mm (in).....	0.025 to 0.045 (0.0010 to 0 0018)

(6) Cylinder block

Cylinder bore inner diameter	mm (in).....	87.20 to 87 25 (3.4331 to 3.4350)
Wear limit	mm (m)	0.2 (0.0079)
Cylinder bore taper and out-of-roundness	mm (in).....	0 02 (0 0008)
Surface flatness	mm (in).....	Less than 0.05 (0 0020)

(7) Cylinder head

Surface flatness	mm (in).....	Less than 0.1 (0.0039)

4-2-1-3. TIGHTENING TORQUE

Cylinder head bolts	kg-m (ft-lb)	8.0 to 9.5 (58 to 69)
Rocker cover nuts	kg-m (ft-lb)	0.4 to 0.7 (2.9 to 5.1)
Rocker shaft	kg-m (ft-lb)	3.0 to 4.0 (22 to 29)
Connecting rod cap bolts	kg-m (ft-lb)	5 0 to 6.0 (36 to 43)
Main bearing cap bolt	kg-m (ft-lb)	8. 5 to 11.0 (61 to 80)
Flywheel housing fixing bolts	kg-m (ft-lb)	4.4 to 5.9 (32 to 43)
Flywheel fixing bolts or driving plate	kg-m (ft-lb)	6.0 to 7.5 (43 to 54)
Camshaft sprocket bolt	kg-m (ft-lb)	3.0 to 4.0 (22 to 29)
Oil pan bolts	kg-m (ft-lb)	0 4 to 0 7 (2 9 to 5 1)
011 pan pump bolts	kg-m (ft-lb)	2.1 to 3.5 (15 to 25)
011 pan drain plug	kg-m (ft-lb)	4.5 to 5.0 (33 to 36)
Carburetor nuts	kg-m (ft-lb)	1.4 to 1.8 (10 to 13)
Manifold nuts	kg-m (ft-lb)	1.4 to 1.8 (10 to 13)
Fuel pump nuts	kg-m (ft-lb)	1.4 to 1.8(10 to 13)
(rank pulley bolt	kg-m (ft-lb.....	12 to 16 (87 to 116)
Cover for hydraulic pump chain	kg-m (ft-lb)	0.38 to 0.51 (2.7 to 3.7)
Engine front cover bolts	kg-m (ft-lb)	0.6 to 0.7 (4.3 to 5.1)
Alternator bolts	kg-m (ft-lb)	4.5 to 6. 0 (33 to 43)

4-2-2. TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
I. Noisy engine		
Knocking of crankshaft and bearing.	Loose main bearing Seized bearing. Bent crankshaft. Uneven wear of journal. Excessive crankshaft end play.	Replace. Replace. Repair or replace. Correct. Replace center thrust bearing.
Piston and connecting rod knocking	Loose bearing Seized bearing Loose piston pin. Loose piston in cylinder Broken piston ring. Improper connecting rod alignment	Replace. Replace. Replace pin or bushing. Recondition cylinder Replace Realign.
Camshaft knocking	Loose bearing. Excessive axial play. Rough gear teeth. Broken cam gear	Replace. Replace bearing thrust plate Repair Replace
Timing chain noise	Improper chain tension Worn and/or damaged chain. Worn sprocket. Worn and/or broken tension adjusting mechanism. Excessive camshaft and bearing clearance	Adjust Replace Replace Replace Replace.
Camshaft and valve mechanism knocking	Improper valve clearance Worn adjusting screw. Worn rocker face Loose valve stem in guide. Weakened valve spring Seized valve	Adjust Replace Replace. Replace guide. Replace. Repair or replace.
Water pump knocking	Improper shaft end play. Broken impeller	Replace. Replace.
II. Other mechanical troubles		
Sticking valve	Improper valve clearance. Insufficient clearance between valve stem and guide. Weakened or broken valve spring Seized or damaged valve stem. Poor fuel quality.	Adjust Clean stem or ream guide Replace Replace or clean Use better fuel.

Condition	Probable cause	Corrective action
Seized valve seat	Improper valve clearance Weakened valve spring Thin valve head edge Narrow valve seat Overheating Over speeding Sticking valve guide	Adjust Replace. Replace valve Reface. Repair or replace. Drive within proper speed Repair.
Excessively worn cylinder and piston	Shortage of engine oil. Dirty engine oil Poor quality of oil Overheating Faulty assembly of piston with connecting rod Improper piston ring clearance Broken piston ring Dirty air cleaner Too rich mixture Engine over run Sticking choke valve Overchoking	Add or replace oil. Clean crankcase, replace oil and oil filter element. Use right oil. Repair or replace. Repair or replace Adjust. Replace Clean. Adjust Drive at proper speeds Clean and adjust Statt correctly.
Malfunctioning connecting rod	Shortage of engine oil. Low oil pressure Poor quality of engine oil. Rough surface of crankshaft. Clogged oil passage. Bearing wear or eccentricity. Improper bearing assembly. Loose bearing. Connecting rod alignment incorrect	Add oil. Correct. Use right oil. Grind and replace bearing. Clean. Replace. Correct. Replace. Repair or replace.
Malfunctioning crankshaft bearing	Shortage of engine oil Low oil pressure. Poor quality of engine oil. Crankshaft journal worn or out-of-round. Clogged oil passage in crankshaft Bearing wear or eccentricity Improper bearing assembly Eccentric crankshaft or beanng	Add or replace. Correct. Use right oil. Repair. Clean. Replace. Correct. Replace.

4-2-3. ENGINE DISASSEMBLY

1. Remove air cleaner assembly, and cover carburetor air horn with a clean cloth.
2. Fix engine to an engine stand.

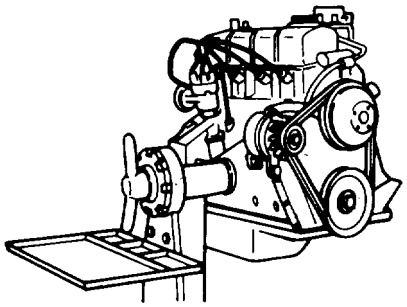


Fig. 4-15. Engine on Stand

3. Remove oil pan drain plug and drain oil.
4. Remove oil level gauge, fuel line, and distributor (advance timer) connections. Remove distributor by unscrewing clamping bolts and remove distributor driving spindle.

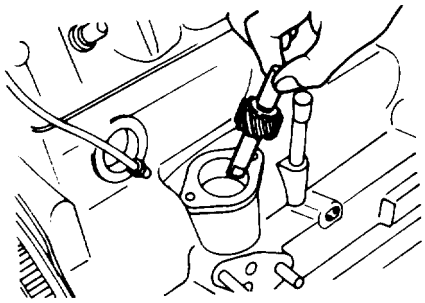


Fig. 4-16. Removal of Distributor and Distributor Driving Spindle

5. Remove spark plugs, Keep washer together with spark plug.
6. Remove cooling fan, pulley and spacer. Remove water outlet (elbow) and thermostat.
7. Remove water pump and alternator fixing bar.
8. Remove alternator, bracket, left side mount-ing bracket and drain hose.
9. Remove carburetor.

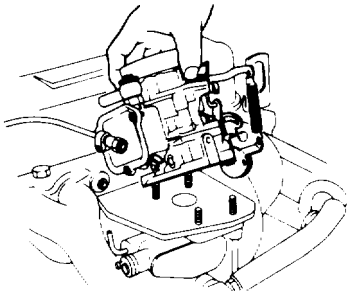


Fig. 4-17. Removal of Carburetor

10. Disconnect water hose from water jacket at intake manifold; remove water jacket plate together with gasket.

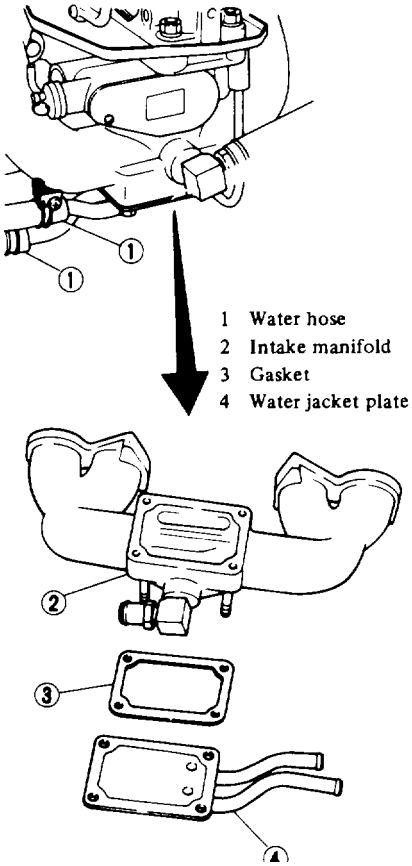


Fig. 4-18. Removal of Water Jacket Plate

11. Remove intake and exhaust manifolds.

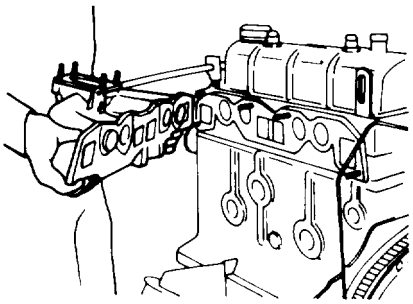


Fig. 4-19. Removal of Manifold Assembly

12. Remove rocker cover and gasket.

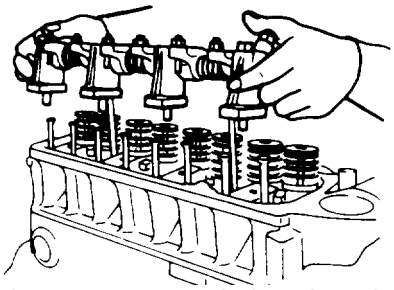


Fig. 4-20. Removal of Rocker Shaft Assembly

13. Remove rocker shaft assembly.

To loosen bolts attaching rocker shaft brackets, they should be equally loosened. Withdraw push rods. Remove front slinger.

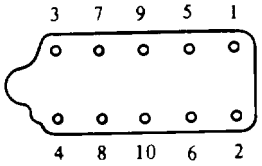


Fig. 4-21. Cylinder Head Bolt Loosening Sequence

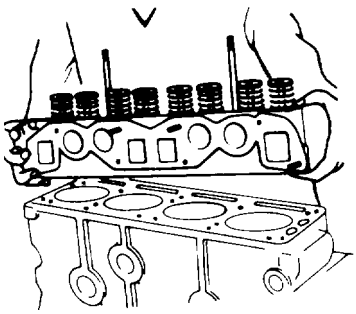


Fig. 4-22. Removal of Cylinder Head

14. Remove cylinder head and gasket.

Loosen bolts beginning with those on oustide to keep from warping head.

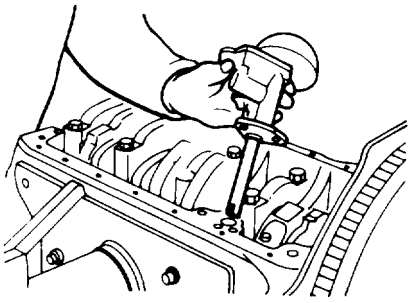


Fig. 4-23. Removal of Oil Pump

15. Remove oil pan and oil pan gasket.
16. Remove oil pump.
17. Remove crankshaft pulley.
18. Remove hydraulic pump chain cover.

Note:
a. To remove cover, remove attaching bolts and then tap cover with a soft-faced hammer.
b. Always install a new gasket, when re assembling.

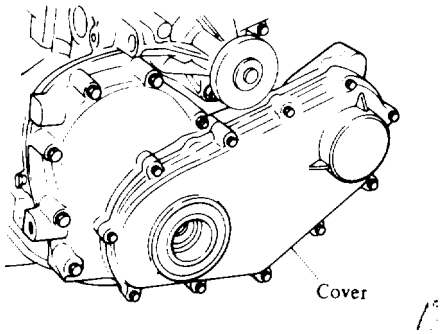
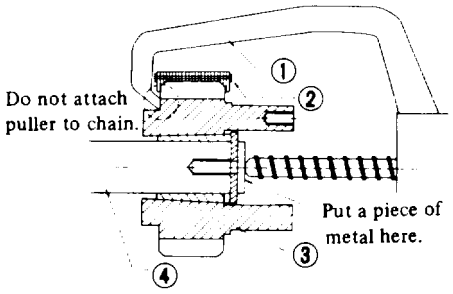


Fig. 4-24. Cover of Hydraulic Pump Driving Chain

19. Remove crankshaft sprocket wheel, oil pump sprocket wheel and hydraulic pump chain as an assembly.

Note: Pull out crankshaft sprocket after re-moving attaching bolts; pull out hydraulic pump sprocket together with bearing, by hand.



1 Puller
2 Chain
3 Sprocket
4 Crankshaft

Fig. 4-25. Removing Crankshaft Sprocket

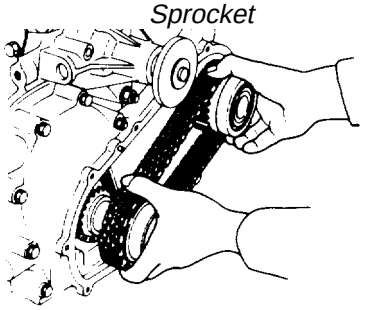
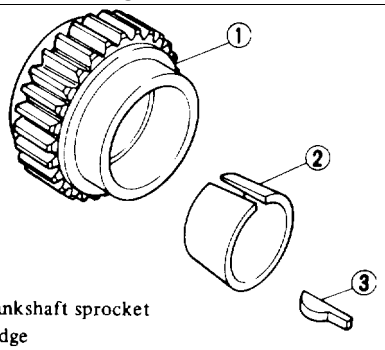


Fig. 4-26. Crankshaft Sprocket

CAUTION:
Be careful not to damage chain.



1 Crankshaft sprocket
2 Wedge
3 Key

Fig. 4-27. Crankshaft Sprocket

20. Press out bearing from hydraulic pump sprocket with a Bearing Puller.

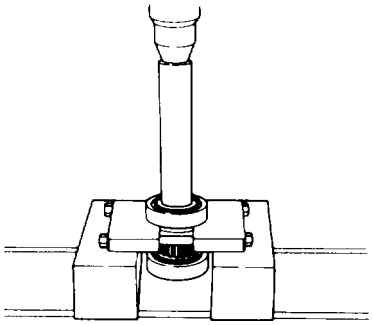


Fig. 4-28. Removing bearing

21. Remove front oil seal.

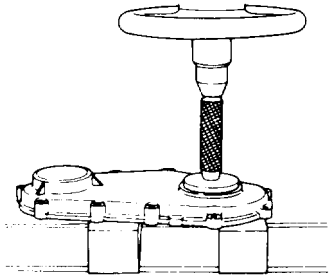


Fig. 4-29. Removing Front Oil Seal

22. Remove front cover and gasket.
23. Remove chain tensioner.
24. Remove camshaft sprocket. Crankshaft sprocket and timing chain simultaneously.

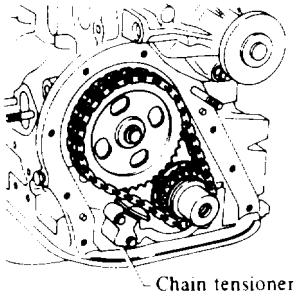


Fig. 4-30. Removing Timing Chain

25. Remove crankshaft gear shim, if installed. Shim can be removed by taking a woodruf key off.
26. Turn engine over.
27. Withdraw valve lifters. Lay out removed valve lifters in proper order (by cylinder).
28. Remove connecting rod caps.

Pre-set crankshaft pin to top or bottom dead center (TDC or BDC). Be careful that pistons do not drop. Lay out bearings according to applicable pistons.

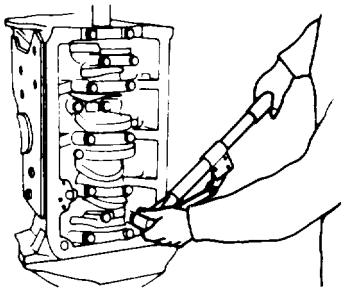


Fig. 4-31. Removing Connecting Rod Cap

29. Remote flywheel. Straighten bent tongue of lock pate with a chisel or other appropriate tool.
30. Remove rear plate
31. Remove rear main bearing cap and rear oil seal. When removing rear oil seal from knock pin (positioning pin), be careful not to damage oil seal housing.

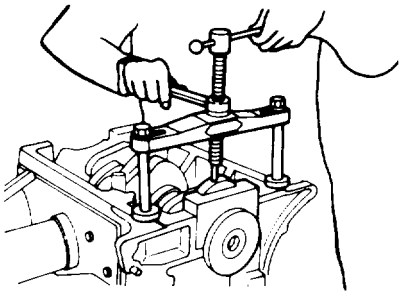


Fig. 4-32. Removing Rear Main Bearing Cap

32. Remove (pull) pistons in direction of cylinder block fire deck (toward cylinder block). Temporarily secure cap and connecting rods so that they are not interchanged (mixed) and lay them out in proper order for each cylinder.
33. Remove two bolts attaching camshaft locating plate. Then remove camshaft, taking care not to damage metal surfaces.
34. Remove bearing caps from crankshaft. Remove seals from both sides of rear bearing cap together with crankshaft bearing cap.
35. Remove crankshaft and bearings.

After bearings are removed. lay them out with corresponding caps so that the) are not inter-changed (mixed).

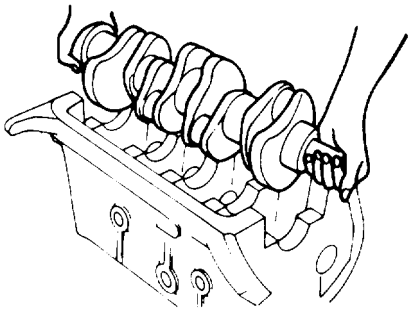


Fig. 4-33. Removing Crankshaft

36. Remove valves and valve springs.

After valves and valve springs are removed, lay them out by individual cylinders. Be careful not to lose or damage rubber ring on end of intake valve stem when removing valves.

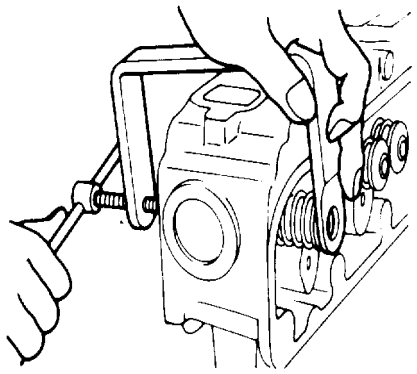


Fig. 4-34. Removing Valve Spring

37. Remove bolts from rocker shaft bracket.
38. Remove cotter pin, washer, and outer spring and then remove rocker arm shaft and bracket in that order.

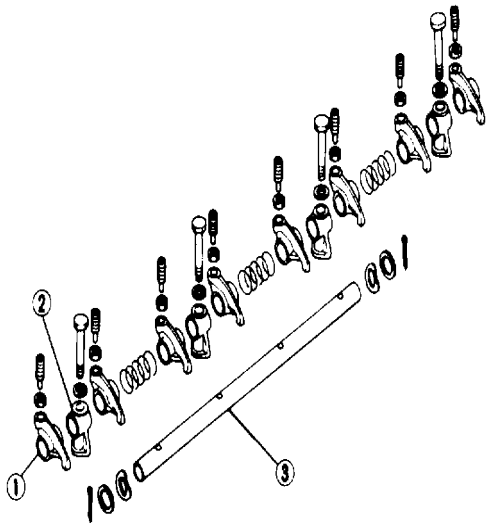


Fig. 4-35. Disassembling Valve Rocker Parts

39. Remove lock nuts and adjusting nuts from rocker arm.

WARNING

Exercise care when removing snap rings, these parts are under spring tension. Severe injury may result by the part striking your eye if you don't observe this precaution. If your eye is struck by a foreign object, seek medical aid immediately.

40. Remove piston rings beginning with top ring (A ring expander helps but is not mandatory)
41. Extract piston pin.

Piston pin and connecting rod are a press fit. To remove piston pin, first remove snap rings and heat piston [80°C (176°F)] and press out pin.

Note: Keep piston, piston pin, piston rings and connecting rod for each cylinder together so that they are not interchanged (mixed) with parts for other cylinders.

4-2-4. INSPECTION AND REPAIR

4-2-4-1. PREPARATIONS FOR INSPECTION

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area. Avoid contact with skin, eyes, and clothes and don't breathe vapors. Do not use near open flame or excessive heat. If you become dizzy while cleaning with solvent, get fresh air immediately and get medical aid. If contact with skin or clothing is made, flush with water. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

WARNING

Compressed air used for cleaning purposes will not exceed 30 PSI. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

(1) Prior to cleaning, check cylinder head and cylinder block for water leakage.
(2) Thoroughly clean all compartments and completely remove all oil, grime, sealing, etc.
(3) Blow compressed air through oil passage in main gallery, etc. To make sure that passages are not clogged.
(4) lay out components such as main bearing cap, connecting rod, etc. as individual assemblies or groups (for each cylinder) so that they are not interchanged (mixed).

4-2-4-2. INTAKE MANIFOLD WATER JACKET

(1) Check water jacket plate for leakage. If there is leakage, replace gasket.
(2) Also check water hose for deterioration or damage, replacing if necessary. If water leaks at or around connection, retighten clamp.

4-2-4-3. CYLINDER HEAD

(1) REMOVING CARBON

Remove carbon from the combustion chamber of the cylinder head and from the side surface on which the manifold is installed and check for scars or damage.

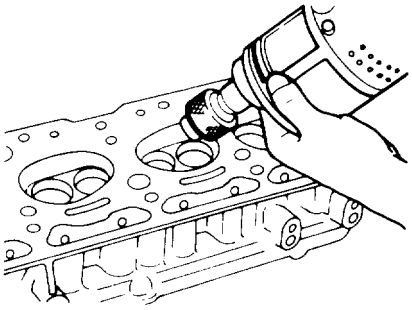


Fig. 4-36. Cleaning Cylinder Head

(2) MEASURING CYLINDER HEAD FOR WARPAGE

Measure the cylinder head surface for both longitudinal and transverse warpage. If uneven (warpage exceeds prescribed limit). correct the surfaces with a mill grinder.

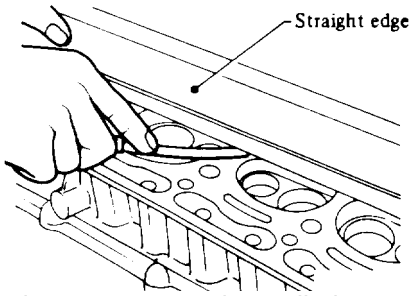


Fig. 4-37. Measuring Cylinder Head Fire Deck (Block Contact Surface) for Warpage

Surface flatness mm (in)	Less than 0.1 (0.004)
Grinding limit mm (in)	2.0(0.08)

(3) REAMING VALVE GUIDES

Measure valve stem and valve guide clearance If clearance exceeds prescribed limit. ream out the valve guide and install valves with oversized stems. Two types are provided (for intake and exhaust valves): .20mm and .40mm oversizes.

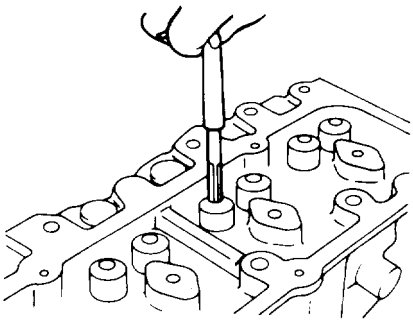


Fig. 4-38. Reaming Valve Guide

		Standard clearance	Service limit Clearance
Valve stem/ valve guide clearance mm (in)	(Intake)	0.028 to 0.030 (0.0011 to 0.0012)	0.10 (0.0039)
	(Exhaust)	0.058 to 0.060 (0.0023 to 0.0024)	0.15 (0.0059)

	Intake valve stem dia. mm (in)	Exhaust valve stem dia mm (in).
STD	8.657 to 8.670 (0.3408 to 0.3413)	8.627 to 8.640 (0.3396 to 0.3402)
20	8.857 to 8.870 (0.3487 to 0.3492)	8.827 to 8.840 (0.3475 to 0.3480)
40	9.057 to 9.070 (0.3566 to 0.3571)	9.027 to 9.040 (0.3554 to 0.3559)

(4) CORRECTING (Grinding) VALVE SEATS

Inspect the valve seat for burning or faulty contact. When correcting the valve seat, first check the valve guide for wear, and if excessively worn, replace the valve and then correct the valve seat.

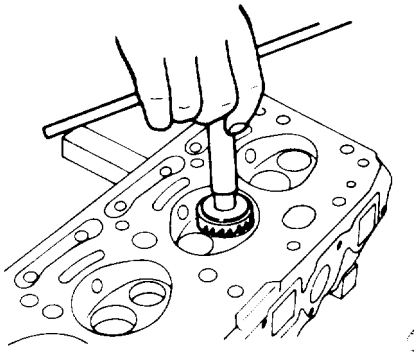


Fig. 4-39. Grinding Valve Seats

(1) Correct valve seat with a seat cutter or seat grinder and finish for proper fit (proper contact) using grinding compound.
(2) First cut to a 75 angle (around entire valve seat) and then bevel edge evenly to a 45° angle. For proper fitting. apply grinding compound (first course and then fine compound) and work valve back and forth against the valve seat until a smooth fit is provided, then apply oil for final fit.

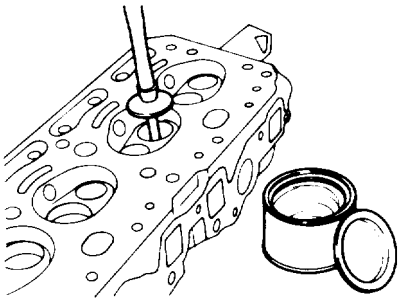


Fig. 4-40. Fitting Valve

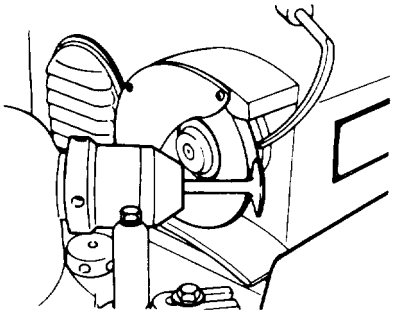
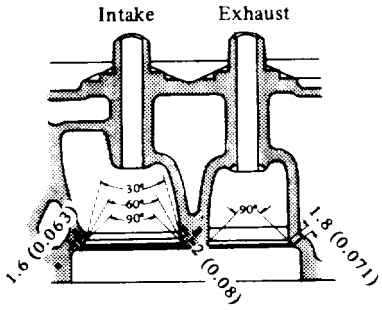


Fig. 4-41. Grinding Valve



Unit: mm (in)

Fig. 4-42. Dimensions of Valve Seats

4-2-4-4. VALVE

(1) Remove all carbon from valve stem and valve seat and inspect valve stem for wear, binding, etc. and check valve seat for wear, recession, etc. caused by stem head wear, and correct or replace as required.

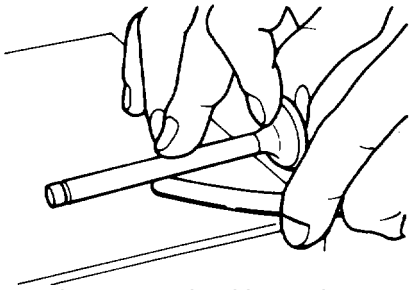
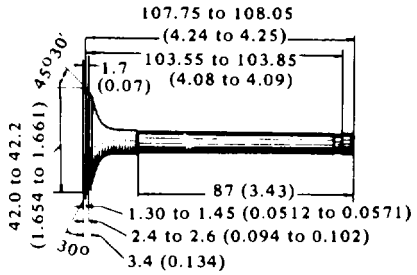


Fig. 4-43. Checking Valve Stem for Bending

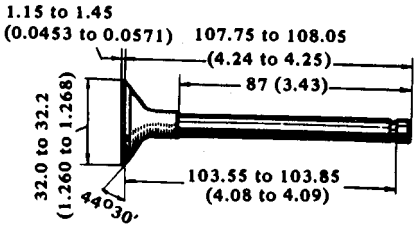
(2) Correct valve seat and valve with a valve grinder. Replace valve if valve head thickness

is less than 0.5 mm (0.020 in). Do not grind end of stem (valve) more than 0.5 mm (0.020 in) [keep within 0.5 mm (0.020 in)].



Unit: m (mm)

Fig. 4-44. Dimension of Intake Valve



Unit: mm (in)

Fig. 4-45. Dimension of Exhaust Valve

4-2-4-5. VALVE SPRINGS

(1) Inspect springs for cracks or damage, measure spring force, and replace if damaged or not within prescribed limits.

(2) Measure inclination (right angle align-ment) of each valve spring with a try square (back square). Replace springs if inclined by more than limit.

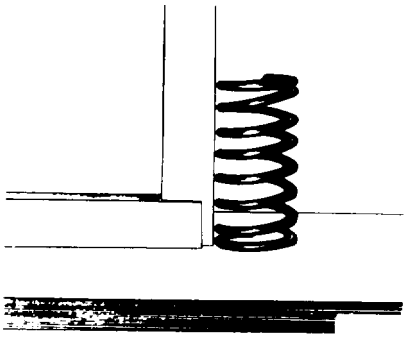


Fig. 4-46. Measuring Spring Inclination

Valve spring specification

Item \ Model	H20
Free length mm (in)	49.0 (1.929)
Installed (set) length mm (in)	390 (1.535)
Set load kg (lb)	30 (66)
Inclination limits mm (in)	Less than 1.5 (0.059)

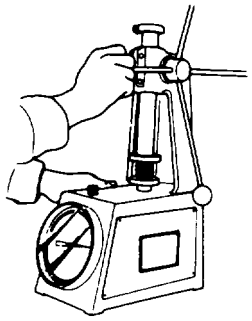


Fig. 4-47. Measuring Spring Constant

4-2-4-6. CYLINDER BLOCK

Measuring longitudinal and transverse warp of cylinder block surface.

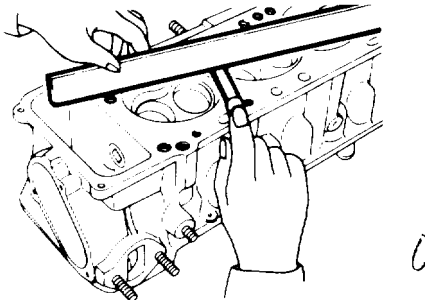


Fig. 4-48. Measuring Warp of Cylinder Block

(1) Remove carbon and other material adherring to cylinder block surface and Inspect for cracks, scars, damage, etc. and then measure cylinder head (using a straight edge and feeler gauge) for both longitudinal and transverse warp.

		Correct to within	Service limit
Cylinder block surface	Longitudinal direction mm (in)	0.05 (0.0020)	0.10 (0.0039)
	Transverse direction mm (in)	0.02 (0.0008)	0.04 (0.0016)

(2) Perform a water leakage test using a hydraulic pressure of from 4 to 4.5 kg/cm2 (57 to 64 psi).

(1) MEASURING CYLINDER BORE

Measure the cylinder bore and if excessively worn or tapered or if scarred. pitted or damaged, or if the piston rings bind, rebore the cylinder. If only slightly worn or tapered, merely correct the counter-bore with a counterboring tool.

Measure cylinder bore with a cylinder gauge. measuring in A and B directions at three places from top to bottom. as shown in the figure, and determine cylinder bore wear(difference between maximum and minimum measurement values).

(difference between maximum and minimum measurement values).

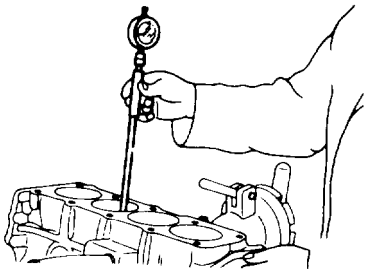


Fig. 4-49. Cylinder Bore Measurement

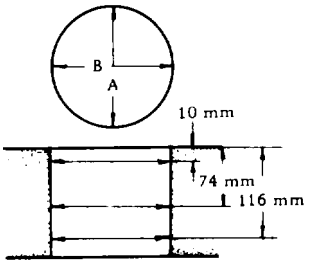


Fig. 4-50. Measuring position of Cylinder Bore

	Correct to within	Service (wear) limit
Cylinder bore mm (in)	87.20 to 87.25 (3.4331 to 3.4350)	0.2 (0.0079)
Cylinder bore out-of-round limit mm (in)	0.02 (0.0008)	-
Cylinder bore taper mm (in)	0.02 (0.0008)	-
Difference in cylinder bore measurements mm (in)	0.05	-

Prescribed clearance mm (in)	0.025 to 0.045 (0.0010 to 0.0018) [20°C (68°F)]
Feeler gauge pulling force kg (lb)	0.5 to 1.5 (1.1 to 3.3)
Feeler gauge thickness mm (in)	0.04 (0.0016)

(6) Cylinder liner

If cylinder bore exceeds standard size by more than 1.5 mm (0.059 in), apply a cylinder liner. Use a standard size piston and hone for proper fit.

Measure outside diameter of liner (at top, middle and bottom) and hone cylinder bore for fit [oversize of 0.005 to 0.085 mm (0.0002 to 0.0033 in)] based upon maximum measure-ment value. Liners are removed in direction of cylinder head. When difficult to remove, remove with a press.

Size Mark	Outer diameter mm (in)	Inner diameter mm (in)
40	91.20 to 91.25 (3.5905 to 3.5925)	
45	91.70 to 91.75 (3.6102 to 3.6122)	86.70 to 86.80 (3.413 to 3.417)
50	92.20 to 92.25 (3.6299 to 3.6319)	

4-2-4-7. PISTON, PISTON PIN, AND PISTON RINGS

(1) MEASURING PISTON WEAR

(1) Inspect piston thrust surface for binding, scratches, or scars, and replace if excessively damaged or faulty.

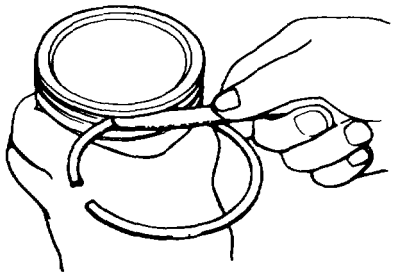


Fig. 4-51. Checking Ring Grooves

(2) Measure piston ring to piston groove (land) clearance. For this measurement, install a new ring on piston and measure with a feeler (thickness) gauge. If clearance exceeds pres-cribed limits, replace rings (or piston) as required.

		Standard mm (in)	Limit mm (in)
Piston ring-to-groove (land) clear-ance-	Top	0.040 to 0.073 (0.0016 to 0.0029)	0.1(0.0039)
	Second	0.030 to 0.063 (0.0012 to 0.0025)	0.1 (0.0039)
	Oil	0.03 to 0.08 (0.0012 to 0.0031)	0.2 (0.0079)

(3) Difference in weight between piston assemblies for individual cylinders should be within 2 grams (0.0705 oz).

(2) PISTON RINGS

(1) Piston ring end gap

To measure piston ring end gap, apply piston ring to part of piston skirt where cylinder wear is minimum, invert piston and, after assuring that piston and ring are positioned at right angles to cylinder, depress piston.

Measure piston ring end gap with a thickness gauge and replace piston ring with a new ring if end gap measurement exceeds I mm (0.0394 in). If end gap is less than 0.15 mm (0.0059 in), either correct by applying an oil stone to grind down ends of ring, or replace ring with a new ring.

(2) Measuring piston ring contracting force.

Measure contracting force with a ring tester. If load required to contact gap is below specified value, replace ring.

(2) BORING AND HONING

(1) Determine proper oversize according to extent of cylinder bore wear, measure outside diameter of piston (long span across skirt of piston) and rebore, leaving 0.02 mm (0.0008 in) for honing, so that piston to cylinder clearance is within 0.025 to 0.045 mm *0.0010 to 0.00 1 8 in). Measure cylinder at normal temperature. If reboring of one cylinder, is required, rebore all cylinders at same time.

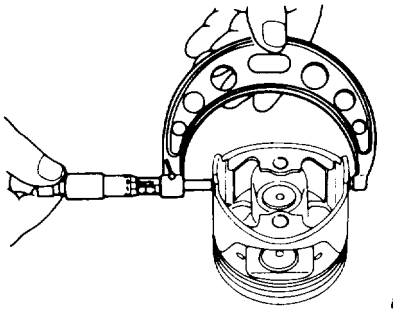


Fig. 4-52. Measuring Long Span of Piston Skirt

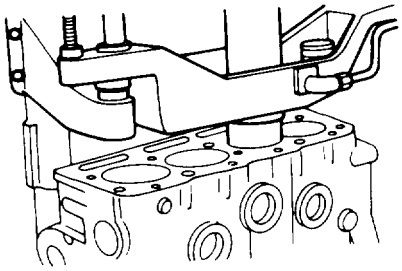


Fig. 4-53. Honing of Cylinder Block

(2) Calculating individual cylinder bore sizes:

Piston skirt outside diameter (measured value): A
Piston to cylinder clearance: B
B = 0.025 to 0.045 mm (0.0010 to 0.0018 in) [at 20°C (at 68° F)
Honing allowance: C
C = 0.02 mm (0.0008 in)
Cylinder bore: D
D = A+ B-C

(3) Cylinder boring precautions

Cutting depth of cutting tool should be approximately 0.05 mm (0.0020 in). Do not cut quickly all at one time cut gradually.

Measure cylinder bore carefully, since bore will change due to heat generated by cutting.

To avoid deviations or distortions due to cutting heat, bore cylinders in following sequence of 24-1-3.

Mark pistons according to applicable cylinder so that pistons are properly applied to correct cylinder and so that they are not interchanged (mixed).

(4) Measure bore and check taper and trueness (out-of-round) condition after proper finishing by honing.

(5) Measure piston to cylinder clearance.

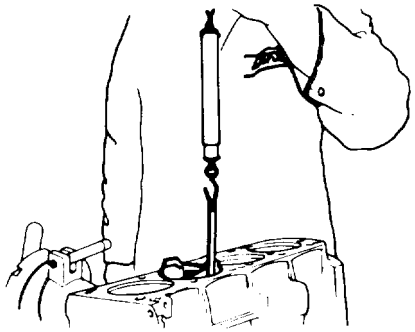


Fig. 4-54. Measuring Clearance between Piston and Cylinder

For this measurement, Insert piston from reverse side (with piston pin removed) and insert a feeler gauge 0.04 mm (0.016 in) so that it projects on thrust side of piston. Then apply a spring scale to gauge and lift vertically. If spring scale reading is 0.5 to 1.5 kg (1.1 to 3.3 lb), clearance is normal.

Oversized piston

Piston size	Diameter mm (in)
STD	87.185 to 87.235 (3.4325 to 3.4344)
0.50 O.S.	87.655 to 87.715 (3.4514 to 3.4533)
1.00 O.S.	88.165 to 88.215 (3.4711 to 3.4730)
1.50 O.S.	88.665 to 88.715 (3.4907 to 3.4927)

Piston ring end gap:
0.20 to 0.30 mm
(0.0079 to 0.0118 in)

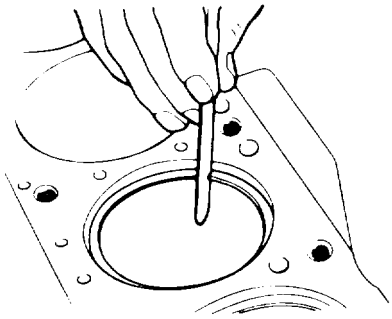


Fig. 4-55. Measuring Piston Ring End Gap

Oversize piston rings

Oversize piston ring mm (in)	0.5 (0.020) 1.0 (0.039) 1.5 (0.059)

		Standard mm (m)	Limit mm (in)
Piston ring end gap	Top	0.25 to 0.40 (0.0098 to 0.0157)	1.0 (0.0394)
	Second	0 15 to 0.30 (0.0059 to 0.0118)	1.0 (0.0394)
	Oil	0.15 to 0.30 (0.0059 to 0.0118)	1.0 (00394)

CAUTION:
When piston ring only is to be replaced, without cylinder bore being corrected, measure gap at bottom of cylinder where wear is minor.

Ring compression [Ring end gap 0 51 to 0.84 mm (0.0201 to 0.0331 in)]	Service limit
Top ring kg (lb)	1.36 to 1.64 (3 0 to 3.6)
Second ring kg (lb)	1.05 to 1.35 2.3 to 3.0)
-O - ring kg (lb)	1.32 to 1.68 (2.9 to 3 7)

(3) PISTON PIN

Check piston-to-piston pin fit for looseness. To check, warm piston pin in piston with a finger. If piston pin can be pushed in with some resistance, the fitting is normal. If loose fitting is detected, replace piston and piston pin as an assembled unit.

4-2-4-8. CONNECTING RODS

(1) CORRECTION FOR BENDING OR TWISTING (Parallel alignment)

Inspect the thrust surfaces (both ends) and the inner portion of the large end (crankshaft end) for wear or damage. and correct or replace. as required. Check for bending or twisting (parallel alignment) using a connecting rod alignment tool. If bent or twisted (out of parallel alignment) beyond the service limit. but within repair limit, correct with a press. If bent or twisted beyond repair limit. replace with a new connecting rod.

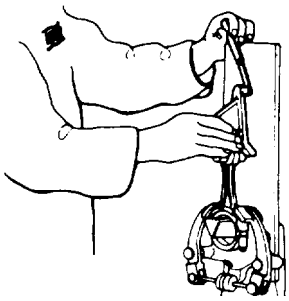


Fig. 4-56. Measuring Parallel Alignment (Bending and Twisting) of Connecting Rod

	Correct to within	Service (Bend/twist) limit
Bend/twist (Parallel align-ment) (Per 100 mm) mm (in)	0.025 (0.0010)	(B) 0.07 (0.003) (T) 0.10 (0.004)

(2) CONNECTING ROD WEIGHT

When replacing any or all of the connecting rods, carefully measure their weight to insure that the difference in weight between individual connecting rods does not exceed 5 gr (0.18 oz).

Difference in weight between individual connecting rods (including metal fasteners):
Within 5 gr (0.18 oz)

(3) MEASURING CONNECTING ROD END PLAY

Apply the bushing to the connecting rods and install them on the crankshaft. By pushing the rod to one side, and using a feeler (thickness) gauge, measure rod clearance in the shaft (axial) direction against the crankpin.

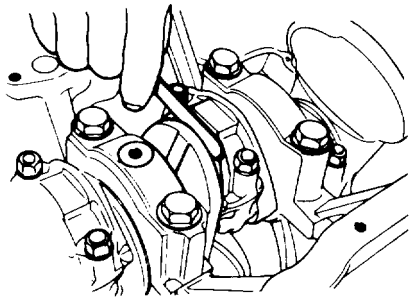


Fig. 4-57. Measuring Connecting Rod

	Standard	Limit
End play mm (in)	0.17 to 0.3 (0.0067 to 0.0118)	04 (0.0157)

(4) CONNECTING ROD BUSHINGS

(1) Inspect bushings for binding, fusing, peeling, contact, etc., and replace if faulty.
(2) Measure lubrication (oil) clearance with a width gauge (plastigage).

(5) Measuring lubrication (oil) clearance

(1) Thoroughly clean all oil and dirt from each component (especially reverse side of bushing) and install connecting rod bushings.

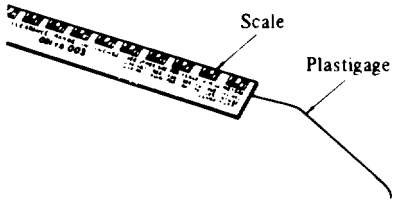


Fig. 4-58. Plastigage

(2) Cut a width gauge (plastigage) the same width as the bushing and provide oil clearance parallel to crank pin. After installing connecting rods, tighten to specified torque.

Tightening torque:
Connecting rod
10 to 11 kg-m
(72 to 80 ft-lb)

CAUTION:
Do not turn crankshaft while plastigage is being inserted.

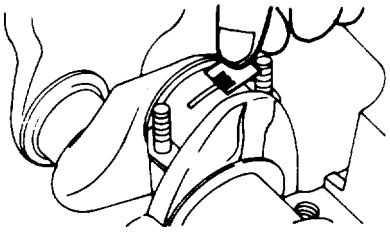


Fig. 4-59. Measuring Lubrication {(Oil) Clearance (II)

(3) Remove cap. and measure width of gauge (using a scale for measurement) at widest point. If the difference between the maximum and width of pressed gauge exceeds 0.03 mm (0.0012 in), check journal for out-of-roundness.

(4) If lubrication (oil) clearance exceeds pre-scribed limit. replace parts as required from service parts Under no circumstances should any attempt be made to adjust lubrication (oil) clearance by using emery cloth on the portion to which the cap is applied, by using shims. or by scraping or filing down bushing.

Connecting rod bushing specifications

Under size mm (in)	Tickness at top of I bushing mm (in)	Crank pin dia. mm (in)
0 25 (0.098)	1 623 to 1 631 (00639 to 0.0642)	51.711 to 51.724 (2.0359 to 2.0364)
0 50 (0.0197)	1.748 to 1.756 (0.0688 to0.0691)	51.461 to 51.474 (2.0260 to 2.0265)

4-2-4-9. CRANKSHAFT

(1) INSPECTION CRANKSHAFT

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area. Avoid contact with skin, eyes, and clothes and don't breathe vapors. Do not use near open flame or excessive heat. If you become dizzy while cleaning with solvent, get fresh air immediately and get medical aid. If contact with skin or clothing is made, flush with water. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

WARNING

Compressed air used for cleaning purposes will not exceed 30 PSI. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

Thoroughly clean the crankshaft and inspect the pin and journal counterweights (balance weights) for cracks or damage, make sure that the oil seal contact surface is satisfactory and that the pins and journals are not scarred or damaged.

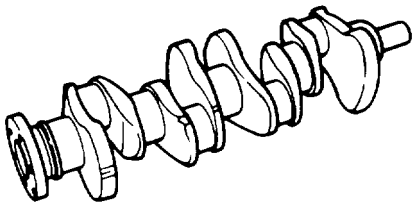


Fig. 4-60. Inspecting Crankshaft

(2) JOURNAL AND PIN DIAMETER MEASUREMENT

Measure journal and pin diameters for wear using a micrometer. If worn beyond the normal service (wear) limit or if out-of-round, correct them to an appropriate undersize (For finishing dimensions refer to paragraphs on main bearing and connecting rod bushings) Measure at a total of 8 positions: 2 positions in the center parts of the pins and journals In which there are no holes, 2 positions at both ends. and 2 positions at right angles to both ends. Eccentric wear Is determined as being the difference between maximum and minimum measurement values.

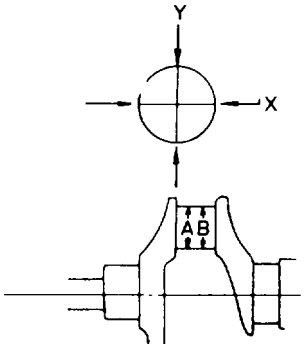


Fig. 4-61. Measuring Journal and Pin Diameter

	Correct to within	Service lout-of round/taper) limit
Degree of out-of-round and taper mm (in)	0.01 (0.0004)	0.03 (0.0012)

(3) MEASURING CRANKSHAFT FOR BENDING

Support both end journals in a V-block or other appropriate support, apply a dial gauge to the center of the journal bearing surface, turn the crankshaft and measure the bend of the crankshaft (I' of the maximum valve shown on the gauge is the amount of bend) If bent beyond the prescribed service limit, straighten with a press, or replace the crankshaft, as required.

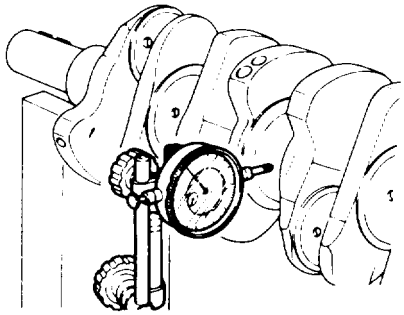


Fig. 4-62. Measuring Crankshaft for Bending

	Correct to within mm (in)	Service (bend) limit mm (in)
Crankshaft bend	0.02 (0.0008)	0.05 (0.0020)

Note: When measuring bend, use a dial gauge. Bend value is half of the reading obtained when crankshaft is turned one full revolution with a dial gauge attached to its center journal.

(4) MEASURING END PLAY

With the crankshaft installed in place and the bearing caps tightened. check the end play with the bearing caps tightened, check the end play at the center bearing. If the clearance exceeds the limit. replace the center bearing with a new one.

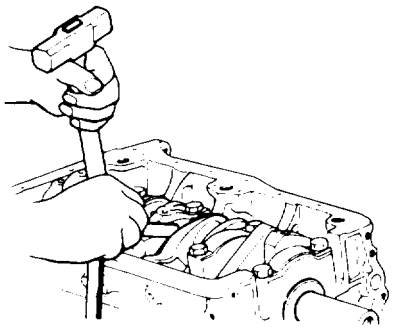


Fig. 4-63. Checking End Play

	Standard	Limit
End play mm (in)	0.05 to 0.18 (0.0020 to 0.0071)	0.2 (0.0079)

4-2-4-10. BEARING SHELLS

(1) NSPECTING BEARING SURFACES

The upper and lower bearing are matched for the front, rear and center bearings and should not be interchanged (mixed). (The upper bearing shell for the rear bearing, for example, should not be used with the lower bearing shell for the front bearing). Make sure that the bearings are not scarred or scratched (due to entry of dirt or other abrasive matter) and that there is no sign of metal fatigue, peeling, or binding. Replace both upper and lower bearing shells as a set, if faulty.

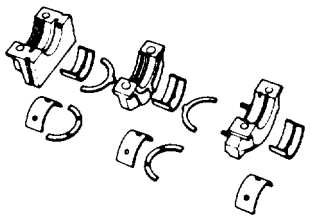


Fig. 4-64. Main Bearing Caps and Bearings

(2) Measuring lubrication (oil) clearance

(1) Measure lubrication (oil) clearance with a width gauge (plastigage). For applicable instructions, refer to paragraph on lubrication (oil) clearance measurement for connecting rod bushing.

Tightening torque:
Bearing cap
8.5 to 9.5 kg-m
(61 to 69 ft-lb)

(2) If lubrication (oil) clearance exceeds prescribed limit, select an appropriate replacement part from service parts, checking crank-journal diameter.

	Correct to within	Service (clearance) limit
Main bearing lubrication (oil) clearance mm (In)	0.02 to 0.062 (0.0008 to 0.0024)	0.1 (0.0039)

Main bearing bushing specifications

Undersize mm (in)	Crank journal dia. mm (in)
0.25 (0.0098)	62.692 to 62.705 (2.4682 to 2.4687)
0.50 (0.0197)	62.422 to 62.455 2.4576 to 2.45)
0.75 (0.0295)	62.192 to 62.205 (2.4485 to 2.4490)
1.00 (0.0394)	61.942 to 61.955 (2.4387 to 2.4392)

4-2-4-11. CAMSHAFT

(1) CHECKING CAMSHAFT FOR BENDING

Measure the camshaft for bending and, If beyond prescribed bend limit, correct with a press or replace with a new camshaft. For measurement, support the camshaft on V-blocks at each end, as shown in Fig. 2-53 (1/2 of the maxi-mum value shown on the dial gauge is the amount of bend).

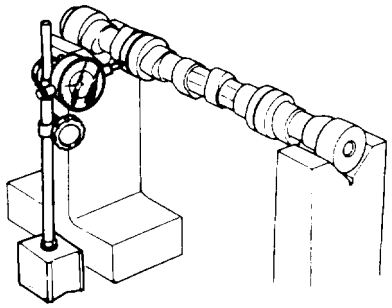


Fig. 4-65. Measuring Camshaft Bending

	Correct to within	Service (bend) limit
Camshaft bending mm (in)	0.02 (0.0008)	0.05 (0.0020)

(2) INSPECTING CAMSHAFT JOURNALS

Check the camshaft journals for damage, out-of-roundness, etc. and correct or replace, as required. (Measure with a micrometer). If excessively worn beyond service limit, grind to prescribed undersize.

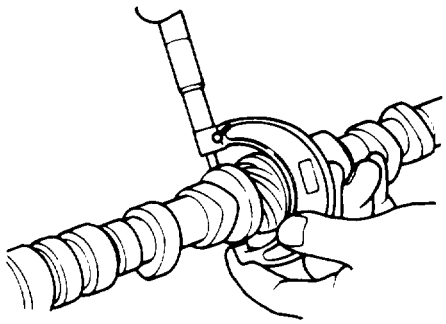


Fig. 4-66. Inspecting Camshaft Journal

	Correct to within	Service (out-of-round/taper) limit
Degree of taper or out-of-round (eccen-tricity) of camshaft Journals mm (in)	0.01 (0.0004)	0.03 (00012)
Journal wear mm (in)		0.05 (0.0020)

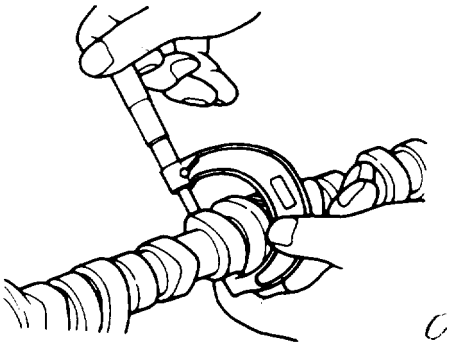


Fig. 4-67. Inspecting Cam Surface

(3) INSPECTING CAM SURFACES

Inspect the cam surfaces. If the cam surfaces are excessively damaged or if cam height has been reduced (worn) by 0.25 mm (0.0098 in) or more. replace the cam with a new one.

Camshaft lobe lift:
37.229 to 37.279 mm
(1.4657 to 1.4677 in)

(4) INSPECTING DRIVE GEAR

Inspect the distributor and oil pump drive gear. If excessively worn or damaged, replace the gear or camshaft with a new one.

(5) VALVE TIMING

This diagram applies to all cylinders. If any valve is found out of specifications, one possibility is that the cam lobe is worn or damaged. This calls for replacement of the camshaft.

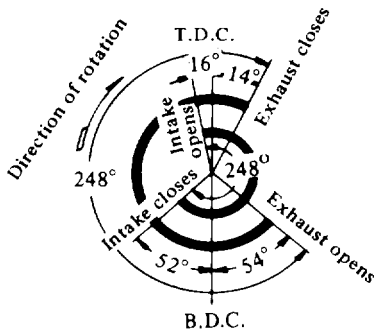


Fig. 4-68.

(6) CAM BUSHING

(1) Inspecting cam bushing

Inspect the cam bushing for binding, fusing, improper contact, etc.. and if faulty, select a suitable replacement from the service parts and replace the bushing.

(2) Measuring lubrication (oil) clearance

Measure the inside diameter of each bushing with a bore gauge. If lubrication (oil) clearance exceeds the prescribed limit, replace the bushing.

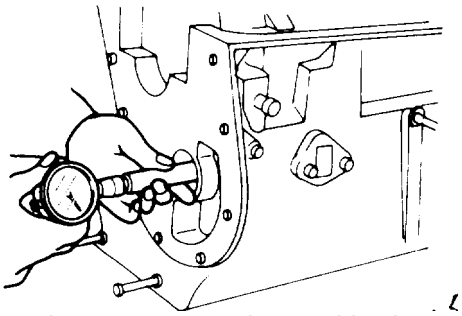


Fig. 4-69. Measuring Bushing I.D.

		Correct to within	Service (clearance) limit
Lubrication (oil)	Front & rear	0.025 to 0.051 (0.0010 to 0.0020)	0.1(00039)
clearane mm (in)	Center	0.038 to 0.062 (0.0015 to 0.0024)	0.15 (0.0059)

(6) TIMING SPROCKET

(1) Inspecting cam gear for wobble

With the camshaft and camshaft sprocket placed on V-blocks. measure camshaft sprocket wobble, and correct or replace the cam gear if wobble exceeds 0.1 mm (0.0039 in). Also inspect the sprocket for broken or damaged teeth and for wear or damage on the boss surface. If excessively worn or damaged, replace with a new gear.

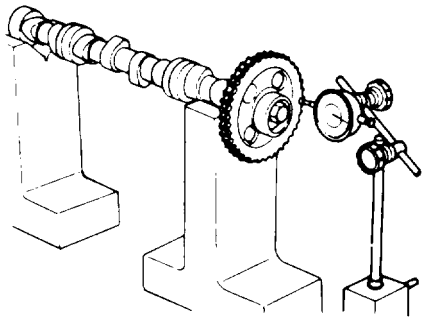


Fig. 4-70. Checking Camshaft Sprocket Wobble

(7) FRONT COVER AND HYDRAULIC PUMP CHAIN COVER

Inspect the installation (mating) surface and oil seal. If damaged or faulty, correct or replace as required.

4-2-4-12. VALVE ROCKER MECHANISM

(1) VALVE LIFTERS

Inspect the periphery of the valve lifter and the cam contact surface. Replace the valve lifter if excessively worn, damaged or fused. Also check for fit in the cylinder block and replace if fit is not proper. Fit should be such that the lifter, with oil applied, lowers slowly and naturally In the hole in the cylinder block.

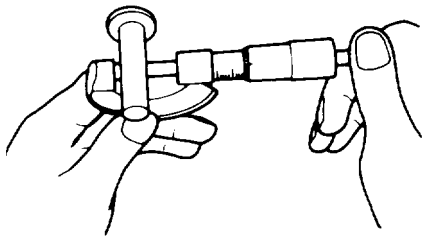


Fig. 4-71. Measuring Diameter of Valve Lifter

	Correct to within	Service limit
Fit (clearance) of valve lifter and cylinder block hole mm (in)	0.016 to 0.052 (0.0006 to 0.0020)	0.1 (0.0039)

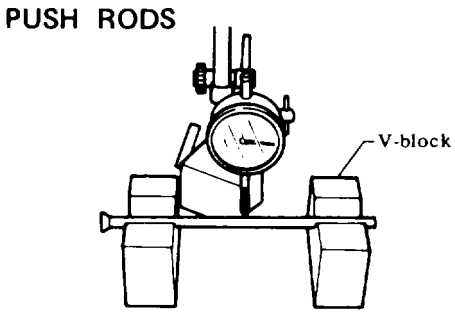


Fig. 4-72. Measuring Push Rod Bending

Inspect the push rods. If excessively worn, twisted, or damaged, replace with a new push rod. If bent by more than 0.05 mm (0.0020 in), correct or replace.

(2) ROCKER SHAFT

Inspect the rocker shaft for wear, damage, bending, etc. Replace if worn by more than 0.05 mm (0.0020 in).

(3) ROCKER ARM AND ADJUSTING BOLT

Inspect the portion of the rocker arm and adjusting bolt contacting the valve stem and check for fit with the rocker shaft. If excessively worn or scarred, or if rocker shaft clearance exceeds the prescribed limit, replace the rocker arm (and adjusting bolt) with a new one.

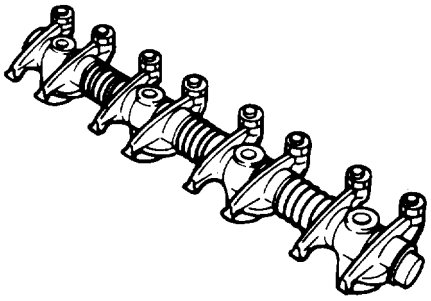


Fig. 4-73. Valve Rocker Shaft Assembly

	Correct to within	Service limit
Rocker arm/ shaft clearance mm (in)	0.020 to 0.054 (00009 to 0.0021)	0.1 (0.0039)

4-2-4-13. DRIVING PLATE, RING GEAR AND FLYWHEEL

Inspect driving plate disc or flywheel contact surface and ring gear teeth. If excessively damaged or worn, repair or replace as required. On flywheel, if ring gear teeth are only slight-ly worn or damaged, ring gear can be reused by changing the installation setting to flywheel by 45°

For replacement, heat the ring gear to 1800C (356°F) and install by shrinkage-fitting.

(1) MEASURING WOBBLE

Measure wobble with a dial gauge while turning crankshaft. If it exceeds specified limits, replace parts.

(1) Flywheel

Wobble limit:

A:

Less than 0.1 mm (0.004 in)

Note: Wobble limit A is max. allowable wobbling of flywheel, as measured perpendicularly with respect to flat surface of flywheel.

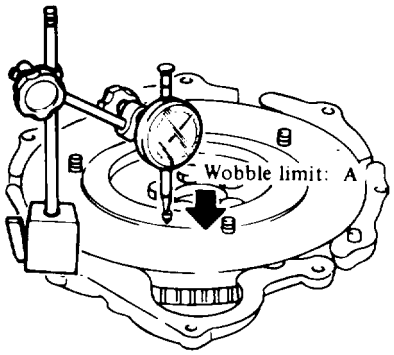


Fig. 4-74. Measuring Flywheel

4-2-5. ENGINE ASSEMBLY

4-2-5-1. PRECAUTIONS

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area. Avoid contact with skin, eyes, and clothes and don't breath vapors. Do not use near open flame or excessive heat. If you become dizzy while cleaning with solvent, get fresh air immediately and get medical aid. If contact, with skin or clothing is made, flush with water. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

WARNING

Compressed air used for cleaning purposes will not exceed 30 OSI. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

(1) Thoroughly clean all components and make sure that all oil passages are clear to prevent clogging.
(2) Properly lubricate all sliding or rotating parts such as bushings. etc. with engine oil.
(3) As a general rule, new packing, oil seals, gaskets, etc. should be applied at time of reassembly.
(4) Apply sealant to portions where there is leakage and/or sealant was used before disassembly to prevent water and oil from leaking.
(5) Make sure that tools, work tables, etc. are clean and free from dirt, grime and oil.
(6) Provide all parts and tools required for assembly and place them in close proximity to work area wherever possible.
(7) Carefully observe prescribed tightening torques and tightening sequence where applicable.
(8) Make sure that all components are properly matched by cylinder and are applied according to proper cylinder

4-2-5-2. PISTON AND CONNECTING RODS

(1) ASSEMBLY

Assemble pistons, piston pins and connecting rods on the designated cylinder.

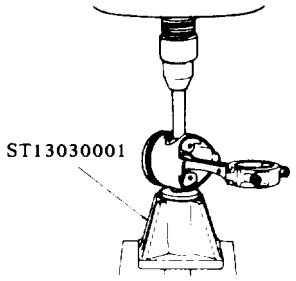


Fig. 4 -75. Installing Piston Pin

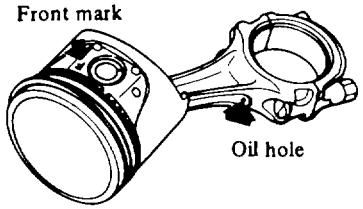


Fig. 4-76. Assembling Piston and Connecting Rod

Note:

- **a. Piston pin is pressed into connecting rod, with fitting force of 9.5 to 1.5 tons. When pressing piston pin into connecting rod, apply engine oil to pin and small end of connecting rod.**
- **b. Arrange so that oil jet of connecting rod big end is directed toward right side of cylinder block.**
- **c. Be sure to install piston in cylinders with front mark of piston head toward front of engine.**
- **d. Arrange connecting rods and caps so that cylinder numbers face in same direction.**

(2) INSTALLING PISTON RINGS

(1) Make sure that top, second, and oil rings are placed in proper positions and are not interchanged. Reassemble oil ring, second ring, and top ring in that order.

(2) Install rings with piston ring notch facing up.

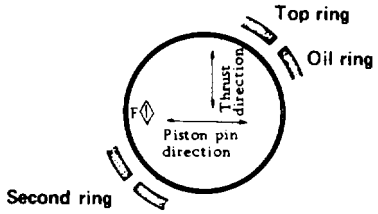


Fig. 4-77. Correct Piston Ring Position on Piston.

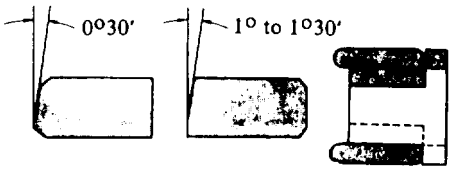


Fig. 4-78. Section View of Piston Rings.

4-2-5-3. ASSEMBLING OF ENGINE

(1) INSTALLING VALVES AND VALVE SPRINGS

Use Valve Lifter to install intake and exhaust valves, valve springs, valve spring retainers, valve collets and rubber rings to cylinder head in the order listed

Note:

a. Do not interchange valves between cylinders, for their sliding or seating surfaces have undergone wearing-in or have been lapped at assembly, forming specific contact with their mating parts.
b. Check to be sure that valves are properly seated on valve seats without foreign particles stuck inbetween.

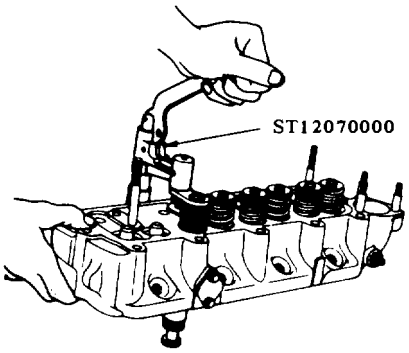


Fig. 4-79. Installing Valve Springs.

(2) INSTALLING VALVE ROCKER SHAFT

Install the bracket and inner spring on the valve rocker shaft. The shaft has four installation bolt holes. Face the side with the larger hole (which also serves as a lubrication hole) to the front. Install the lock washer. spacer, and cotter pin in that sequence to both ends of the rocker arms.

(3) INSTALLING CAM BUSHINGS

(1) Installing center bushing

Face notch toward distributor drive side (downward) match block and jig caulking hole and tap on bushing.

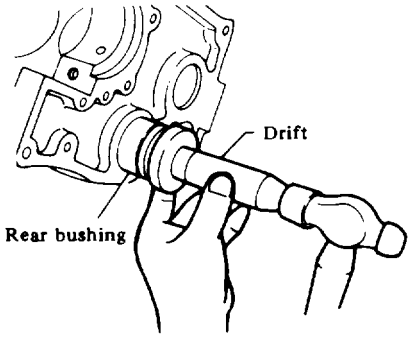


Fig. 4-80. Installing Rear Bushing.

(2) Installing rear bushing

Face arrow mark on end of bushing, upward. Align oil hole with oil hole in cylinder block and tap rear bushing into position, as shown in figure 2-68. Diameter of bushing is slightly larger toward rear and bushing is press fit in block.

(4) CRANKSHAFT REAR BEARING OIL SEAL

(1) Using oil seal replacer, install rear oil seals into cylinder block groove and rear bearing cap respectively. When seal is fully inserted, ends of seal protruding above bearing supports should be cut off so that seal ends line up with each other.

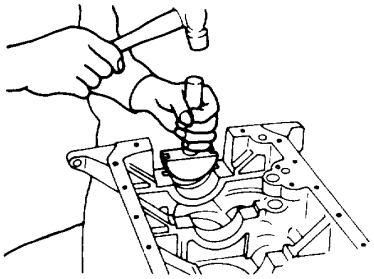


Fig. 4-81. Oil Seal Installation.

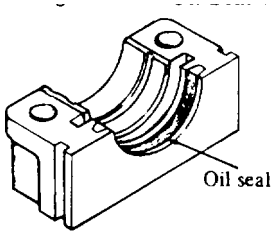


Fig. 4-82. Oil Seal Installation.

(2) Install main bearings and thrust bushings in main bearing caps and cylinder block.

WARNING

Dry, cleaning solvent P-D 680 is toxic and flammable. protective goggles and gloves and use only in a ventilated area. Avoid contact with skin, eyes, and clothes and don't breathe vapors. Do not use near open flame or excessive heat. If you become dizzy while cleaning with solvent, get fresh air immediately! and get medical aid. If contact with skin or clothing is made, flush with water. If contact, with eyes is made, flush your eyes with water and get medical aid immediately.

WARNING

Compressed air used for cleaning purposes not exceed 30 PSI. Use only with effective chip guarding and personal protective equipment (goggles, shield, gloves, etc.).

(3) Thoroughly clean reverse side of upper and lower bearing shells and make sure that notch and tang on bearing shells are properly matched.

(5) INSTALLING CRANKSHAFT

Install the crankshaft bearing caps with spring washers and bolts. and tighten the bolts
(1) Install seals on both sides of rear crankshaft bearing cap. Face wire backed (hard) side of seal toward cap.

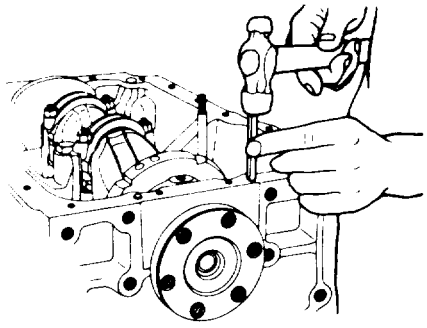


Fig. 4-83. Installing Rear Bearing Side Seals.

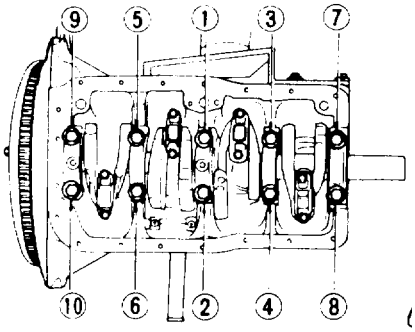


Fig. 4-84. Torque Sequence of Main Bearing Cap Bolts.

(2) Install front and rear caps with their arrow marks to front.

(3) Move crankshaft in an axial (shaft) direction so that center bearing cap is properly aligned and then tighten crankshaft bearing caps to prescribed tightening torque.

(4) Do not tighten caps all at once Tighten them in 3 or 4 stages beginning from inside to out (repeating tightening sequence 3 or 4 times until completely tightened to prescribed tightening torque).

(5) While tightening caps, check crankshaft to make sure that it turns freely.

Cranking (crankshaft turning) torque should be 2.0 kg-m (14 ft-lb) or less.

Tightening torque:
Main bearing cap
8.5 to 11 kg-m
(61 to 80 ft-lb)

(6) INSTALLING FLYWHEEL

(1) Install flywheel housing.
(2) Install flywheel with bolts and lock plates. and bend lock plates from outside for safety lock.

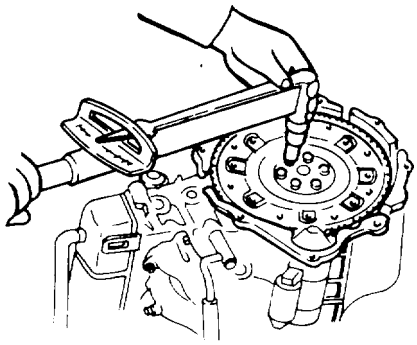


Fig. 4-85. Installing Flywheel.

Tighten crank nuts

Tightening torque:
Flywheel
6.0 to 7.5 kg-m
(43 to 54 ft-lb)

(7) INSTALLING PISTONS

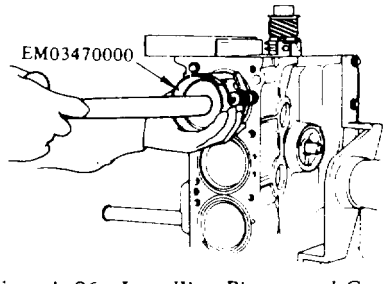


Fig. 4-86. Installing Piston and Connecting Rod Assembly.

(3) Install piston with "F" mark (on piston head) to front.
(4) Set crankshaft pins to top and bottom dead center position.
(5) Position piston rings so that end gaps are offset (alternately for adjacent rings) by 180° and so that none of the end gaps are aligned in piston thrust direction.
(6) Install piston and connecting rod assembly (without cap) from top.
(7) Install cap on each assembly before Installing the next piston and connecting rod assembly.

(8) INSTALLING CONNECTING ROD CAPS

Install the connecting rod cap so that the cap and connecting rod cylinder number markings are aligned (on the same side).

Turn crankshaft one revolution before installing the next piston and rod.

Connecting rod caps
5.0 to 6.0 kg-m
(36 to 43 ft-lb)

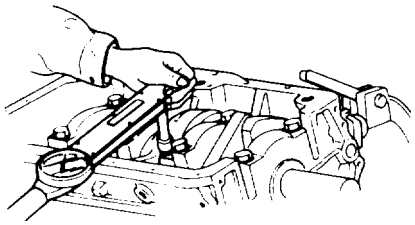


Fig. 4-87. Tightening Connecting Rod Bearing Caps.

(9) INSTALLING VALVE LIFTERS

Make sure that the valve lifters are installed in proper direction. Apply oil to the holes in the cylinder block and lightly press the valve lifters into the holes by hand. Apply Loc-Tite® and install the front plate and packing.

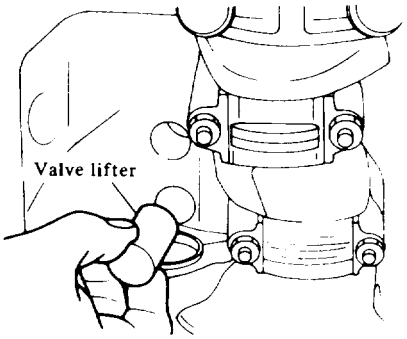


Fig. 4-88. Insert Valve Lifter.

(10) INSTALLING CAMSHAFT

(1) Install the camshaft in place, taking care not to damage the bearing bushings.
(2) Tighten the bolts attaching the camshaft locating plate to the cylinder block to the specified torque.

Tightening torque:
Camshaft locating plate to cylinder block bolts
0.6 to 0.8 kg-m
(4.3 to 5.8 ft-lb)

Temporarily install the camshaft and crank shaft sprockets in place, and adjust the position of both gears. using washers. so that they are in line within 0.2 mm (0.008 in). Align the marks on the gears and timing chain, and install them to the engine and tighten the camshaft gear securing nut

Tightening torque:
Camshaft gear securing nut
4.5 to 6.0 kg-m
(33 to 43 ft-lb)

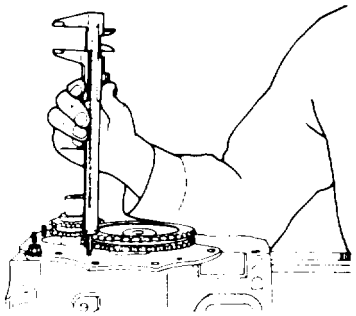


Fig. 4-89. Checking Alignment of Gears.

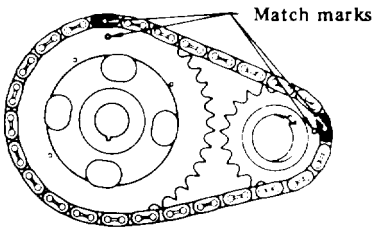


Fig. 4-90. Installing Timing Gears and Chain.

(11) INSTALLING TIMING CHAIN TENSIONER

Install the chain tensioner, lock washers and tighten the bolts to the specified torque and bend the tongue of washers to lock the bolts.

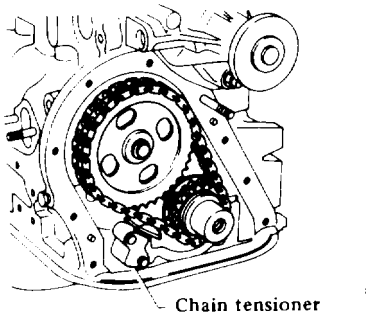


Fig. 4-91. Installing Chain Tensioner.

(12) INSTALLING FRONT COVER

(1) Install the oil thrower on the crankshaft with the chamfered side toward front of engine.

(2) Install the front cover through the cover gasket by aligning the dowel pins on both sides.

(3) Apply lithium grease to the lip of the oil seal.

(13) INSTALLING COVER, SPROCKETS AND CHAIN FOR HYDRAULIC OIL PUMP

(1) Press bearing into sprocket on pump side. Bearings come in two types, a one-side shielding type and an open type (not shielded on either side).

Make sure that shielding type bearing is in stalled on the sprocket on the pump side with shielding face toward sprocket splines.

CAUTION:
Note installation direction of bearing.

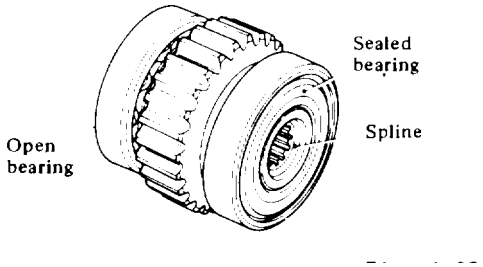


Fig. 4-92.

(2) Install chain on sprocket, oil pump and crankshaft pulleys.

(3) Attach key to crankshaft, and then drive a wedge into clearance between crankshaft and its sprocket. Temporarily tighten crankshaft bolt to secure wedge In place, and then remove bolts.

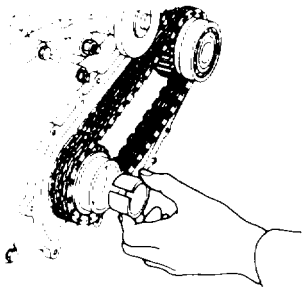


Fig. 4-93.

(4) Install hydraulic oil pump chain cover with gasket in place.

(14) INSTALLING CRANK PULLEY

Align the pulley key slot with the key on the crankshaft, fit the pulley, and secure the crank pulley bolt.

Tightening torque:
Crank pulley bolt
12 to 16 kg-m
(87 to 116 ft-lb)

(15) INSTALLING OIL PUMP

The distributor is driven by the oil pump through the oil pump pinion. Ignition timing is changed according to the installing direction of the gear.

(1) Turn oil pump so that narrow portion on top of drive pinion gear faces to front when No. I cylinder Is set to compression top dead center (TDC) position and align oil pump with set bolt position.
Install oil pan end first.

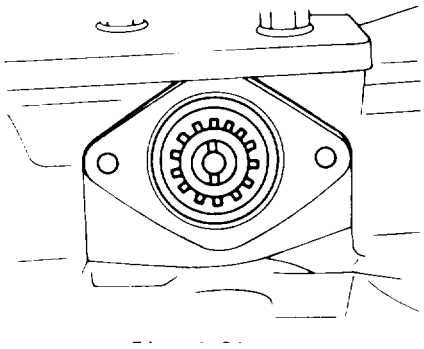


Fig. 4-94. Drive Gear Position.

(2) Apply Loc-Tite® seal to set bolt and install It in hole in pump body and tighten bolt securely and lock with lock nut.
(3) Install oil pan with oil pan gasket
Tightening torque:
Oil pan
0.4 to 0.7 kg-m
(2.9 to 5.1 ft-lb)
Drain Plug
4.5 to 5.0 kg-m
(33 to 36 ft-lb)

(16) INSTALLING CYLINDER HEAD

(1) Install guide bolts on both sides of cylinder block.
(2) Install new cylinder head gasket.
(3) Place cylinder head over guide bolts, and install on block.

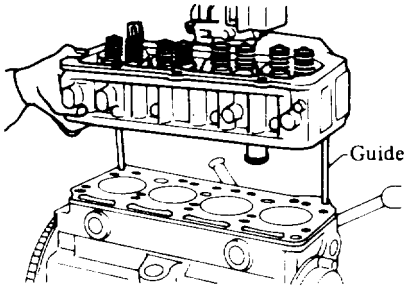


Fig. 4-95. Installing Cylinder Head.

(4) Install cylinder head bolts, tighten them in sequence shown below (tighten alternately and evenly, gradually tightening in 3 or 4 stages) and finally tighten them to prescribed tightening torque.

Temporary tightening torque:
Cylinder head bolts
6.5 kg-m (47 ft-b)
Tightening torque:
Cylinder head bolts
8.0 to 8.5 kg-m
(58 to 61 ft-lb)

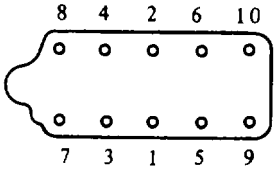


Fig. 4-96. Tightening Sequence of Cylinder Head Bolts.

(5) Install push rods.

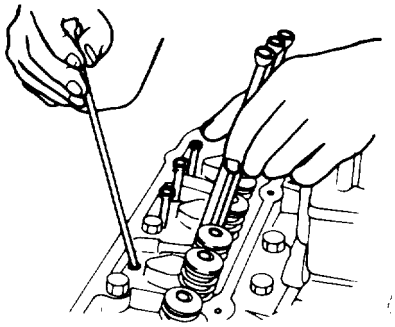


Fig. 4-97. Inserting Push Rods.

(17) INSTALLING ROCKER SHAFT ASSEMBLY

(1) Tighten rocker shaft assembly in same manner as cylinder head (gradually tightening alternately and evenly in 3 or 4 stages from center to outside).

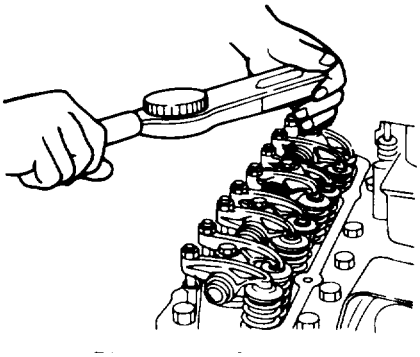


Fig. 4-98. Securing Rocker Shaft.

Tightening torque:
Rocker shaft
3.0 to 4.0 kg-m V
(22 to 29 ft-lb)

,

(2) Adjust valve clearance to standard value (at normal temperature - with engine cool).

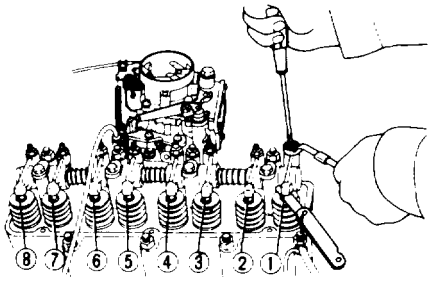


Fig. 4-99. Adjusting Valve-Tappet Clearance.

Refer to section 1-3-2 (2)

	Model H20 PU240
Intake valve clearance (hot)	0.38 mm (0.015 in)
Exhaust valve clearance (hot)	0.38 mm (0.015 In)

(3) Install rocker cover.

(18) INSTALLING ENGINE ACCESSORY

Install oil pressure switch.

(19) INSTALLING DISTRIBUTOR

(1) Exercising care so as not to twist O-ring, match projected part of distributor drive shaft to recess in oil pump drive gear.

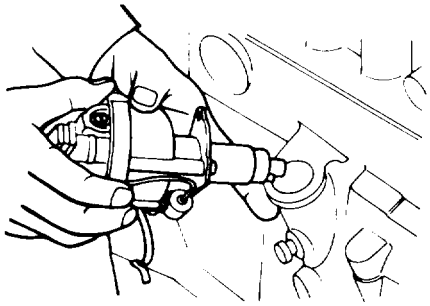


Fig. 4-100. Installing Distributor.

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(2) Align support and block holes and temporarily secure with bolts.

(20) OTHER PARTS

(1) Install fuel pump and fuel line.
(2) Install oil filter assembly.

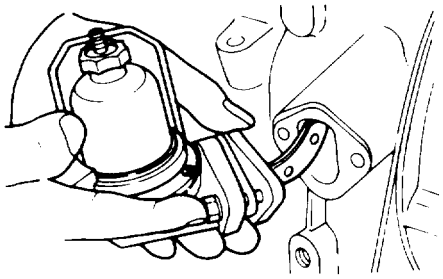


Fig. 4-101. Installing Fuel Pump.

(3) Install oil level gauge.

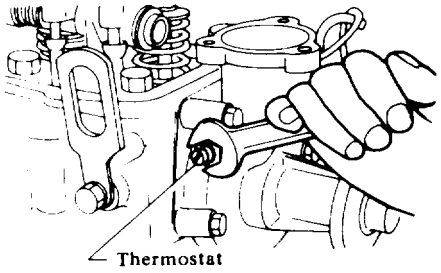


Fig. 4-102. Installing Thermostat and Thermo sender.

(4) Install thermostat and thermo sender.
(5) Connect governor rod and spring to carburetor throttle lever.
(6) Install spark plugs.

Tightening torque:
Spark plug
1.5 to 2.0 kg-m
(11 to 14 ft-b}

(7) Install distributor advance tube and high tension cables.
(8) Dismount engine from support (engine stand)
(9) Install left engine mounting bracket and insulator.
(10) Install right engine mounting bracket and insulator.
(11) Install adjusting bar and alternator.
(12) Install fan belt and fan blade.
(13) Adjust fan belt and tighten adjusting bolts
(14) Install air cleaner.

4-3-1. SERVICE DATA AND SPECIFICATIONS

Oil pump		
Drive shaft diameter	mm (in)	12 958 to 12 976 (0 5102 to 0 5109) 0 024 to O 069
Drive shaft to body clearance	mm (in)	0009 to 0027) (0 0009 to 0 0027)
Limit	mm (in)	0 10(0 0039)
Body to gear tooth point clearance	mm (in)	0.17 to 0.3 (0 0006 to 0 0118}
Limit	mm (in)	0.04(0.0157)
Gear backlash	mm (in)	0.3 to 0 4 (0 012 to 0 016)
Limit	mm (in)	0.25(0 0098)
Cover to gear clearance	mm (in)	0.4 to 1.1(0.0016 to 0.0043)
Limit	mm (in).	0.30(0.0118)
Driven gear to body clearance	mm (in)	0.17 to 0.30 (0 0066 to 0.0118
Limit	mm (in)	0.40(0.0157)
Oil pressure regulator valve		
Oil pressure at idling	kg/cm2 (psi)	more than I.2 (17)
Regulator valve spring		
Free length	mm (in)	40 5 (I 5941
Pressured length	mm (in)/kg (lb}	30.3(1 1931 24 (4 9)
Regulator valve opening pressure	kg/cm2 (psi)	3 5 to 5 0 (50 to 71 1
Tightening torque		
Securing bolts oil pump to cylinder block	kg-m (ft-lb)	2.1 to 3.5 (15 to 25)
Oil filter (cartridge)	kg-m (ft-lb)	2.2 to 3.5(16 to 25)

4-3-2. TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
Oil leakage	Damaged or cracked body cover. Oil leakage from gasket. Oil leakage from regulator valve. Oil leakage from blind plug.	Replace. replace Tighten or replace. replace.
Decreased oil pressure	Leak of oil in engine oil pan. Dirty oil strainer. Damaged or worn pump rotors. Defective regulator. Use of poor quality engine oil.	Correct. Clean or replace. Replace. Replace. Replace.
Warning light remains “on”. engine running	Decreased oil pressure. Oil pressure switch unserviceable. Electrical fault.	Previously mentioned. Replace. Check circuit.
Noise	Excessive backlash in pump rotors.	Replace.

4-3-3. ENGINE LUBRICATION SYSTEM

4-3-3-1. LUBRICATION CIRCUIT

The pressure lubrication of the engine is accomplished by a spur gear oil pump. This pump draws the oil through the oil strainer into the pump housing and then forces it through the full flow type oil filter into the main oil gallery. Part of the oil is supplied to all the crankshaft bearings, chain tensioner and timing chain. Oil supplied to crankshaft bearings is fed to connecting rod bearings through the drilled passages in the crankshaft. Oil injected from jet holes on connecting rods lubricates the cylinder walls and piston pins. The other part of the oil is brought to the oil gallery in the cylinder head to provide lubrication of the valve mechanism and timing chain.

From this gallery, oil holes go directly to all camshaft bearings.

Oil supplied through the No. 2 and No. 3 camshaft bearings is then fed to the rocker arm, valve and cam lobe through the oil gallery in the camshaft and the small channel at the base circle portion of each cam.

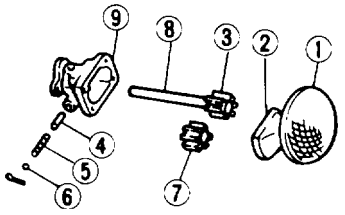
4-3-3-2. OIL PUMP

(1) REMOVAL

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area Avoid contact with skin, eyes, and clothes and don't breathe vapors. Do not use near open flame or excessive heat If you become dizzy while cleaning with solvent, get fresh air immediately and get medical aid. If contact with skin or clothing is made, flush with water. If contact with eyes is made, wash your eyes with water ,and get medical aid immediately.

(1) Remove distributor.
(2) Drain engine oil
(3) Remove oil pan.
(4) Disconnect oil tube at pump body.
(5) Remove oil pump assembly.



(1) Strainer
(2) Cover
(3) Drive Gear
(4) Regulator valve
(5) Regulator valve spring
(6) Adjust shim
(7) Driven gear
(8) Drive shaft
(9) Body

Fig. 4-103. Component Parts of Oil Pump.

(2) DISASSEMBLY

(1) Remove strainer.
(2) Separate body from cover.
(3) Take out shaft assembly and driven gear.
(4) Draw out cock pin and take out shim, spring and valve.

(3) INSPECTION

(1) Inspect all components after cleaning them with P-D-680.
(2) Check clearance between shaft and body bore.
If clearance is in excess of limit, worn part should be replaced.

Drive shaft dia. mm (in)	12.958 to 12.976 (0.5105 to 0.5108)
Drive shaft to body clearance mm (in)	0.024 to 0.069 (0.0009 to 0.0027)
Limit mm (in)	0.10 (0.0039)

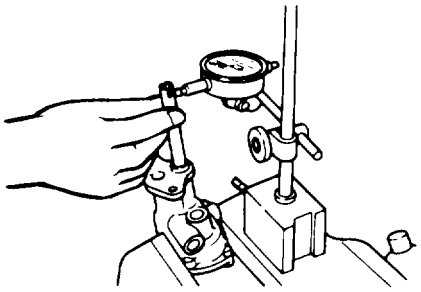


Fig. 4-104. Inspecting Drive Shaft.

(3) Check clearance between body and gear tooth point. If clearance exceeds limit, worn part should be replaced.

Body to gear tooth point Clearance mm (In)	0.17 to 0.30 (0.0066 to 0.0118)
Limit mm(in)	0.40(0.0157)

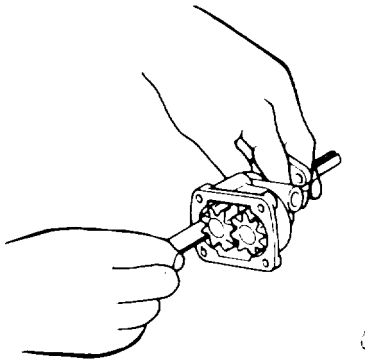


Fig. 4-105. Checking Clearance between Body and Gear.

(4) Inspect gear backlash. If backlash is In excess of limit, replace the gear.

Gear backlash mm (in)	0.3 to 0.4 (0.01 to 0.016
Limit mm (in)	0.25 (0.0098)

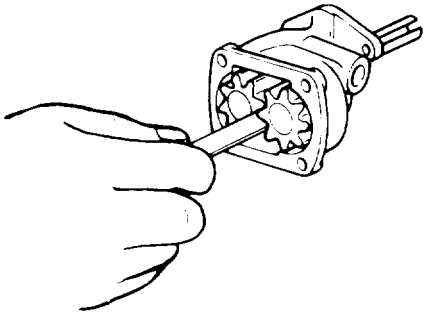


Fig. 4-106. Checking Gear Backlash.

(5) Inspect clearance between gear and straight edge placed across body. Should clearance be In excess of limit, resurface underside of body.

Cover to gear mm (in)	0.04 to 0.11 (0.0157 to 0.0433)
Limit mm (in)	0.30 (0.0118)

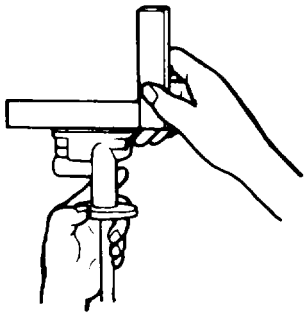


Fig. 4-107. Checking Side Clearance.

(6) Check cover for wear or step wear, especially gear contact points. Plane it off, if necessary.

(4) ADJUSTING REGULATOR

(1) Insert valve in body and measure distance (A) from valve end to cotter pin.

(2) Distance from spring contacting face, inside the valve, to valve end is valve B. (Amounts to be specified.)

18mm (0.71)

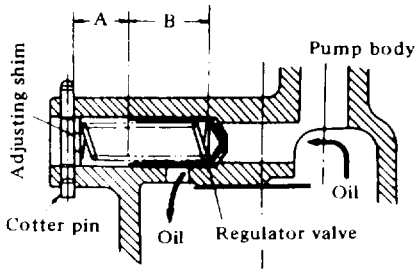


Fig. 4-108. Regulator Valve.

(3) On inspecting above dimensions, determine thickness of adjusting shim.

Shim thickness [A + 18 mm (0.71 in)] - [spring length at compression load 2.24 kg (4.9 lb)].

Item	1 mm (0.04 in)	2 mm (0.08 In)
Adjusting shim	15136-58000	15137-58000

By above mentioned adjustment, regular oil pressure must become specified value.

Regulator valve opening pressure:

3.5 to 5.0 kg/cm^2

(50 to 71 psi)

(5) REGULATOR VALVE

Inspection of valve spring free length and load length.

Item	Free length mm (in)	Set length/Set load mm (in)/kg (lb)
Standard	40.5 to 42.5 (1.594 to 1.673)	30.3 (1.193)/ 2.24 (4.9)
Limit	40.0(1.575)	30.3(1.193)/ 2.1(4.6)

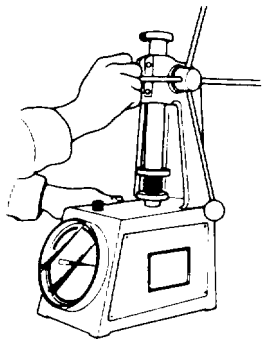


Fig. 4-109. Inspecting Oil Regulator Spring.

Oil pump performance - Reference -

Pump rpm	Oil pressure kg/cm^2 (psi)
600	more than 1.2 (17)
1,200 1	2 8 to 3.4 140 to 481
2,000	3.7 to 3.9 (53 to 55)

4-3-3-3. OIL FILTER

The oil filter is a cartridge type. The oil filter element should be replaced periodically, with the use of an oil filter wrench.

WARNING

Fuel and oil are slippery and can cause falls. To avoid injury, wipe up spilled fuel or oil with rags.

Note

Do not overtighten filter, or oil leakage may occur.

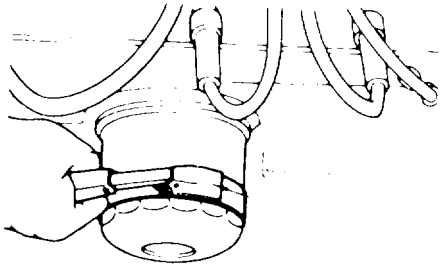


Fig. 4-110. Removing Oil Filter.

4-4-1. SERVICE DATA AND SPECIFICATIONS

Thermostat

		Standard type	Frigid type
Valve opening temperature	°C (°F)	76.5 (170)	88 (190)
Maximum valve lift	mm/°C (in/°F)	8/90(0.31/194)	7/100 (0.28/212)

Radiator

Type		Plate fin type
Cap relief pressure	kg/cm^2 (psi)	0.9 (13)

Cooling system

Leakage testing pressure	kg/cm^2 (psi)	1.6 (23)
Capacity	liters (US qt, Imp qt)	8.5 (9, 7 H)

Fan

Number of blades x outer diameter	mm (in)	6 x 390 (15.35)
Fan belt deflection at 10 kg (22 lb)	mm (in)	8 to 12 (0.31 to 0.47)

4-4-2. TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
Loss of water	Damaged radiator seams	Repair
	Leaks at heater connections or plugs	Repair
	Leak at water temperature gauge	Tighten
	Loose joints	Tighten
	Damaged cylinder head gasket	Replace
		Check engine oil for contamination and refill as necessary
	Cracked cylinder block	Replace.
		Check engine oil in crankcase for mixing with water by pulling oil level gauge
	Cracked cylinder head.	Replace
	Loose cylinder head bolts	Tighten
Poor circulation	Restriction in system	Check hoses for crimps, and clear the system of rust and sludge by flushing radiator.
	Insufficient coolant	Replenish
	Inoperative water pump	Replace
	Loose fan belt	Adjust
	Inoperative thermostat	Replace
Corrosion	Excessive impurity in water	Use soft, clean water. (Rain water is satisfactory)
	Infrequent flushing and draining of system	Cooling system should be drained and flushed periodically. Permanent anti freeze (Ethylene glycol base) can be used throughout the seasons of the year, and changed periodically at intervals recommended
Overheating	Inoperative thermostat	Replace
	Radiator fin choked with mud, chaff, etc	Clean out air passage thoroughly by using air pressure from engine side of radiator
	Incorrect ignition and valve timing	Adjust.
	Dirty oil and sludge in engine	Refill
	Inoperative water pump.	Replace
	Loose fan belt	Adjust
	Restricted radiator	Flush radiator
	Inaccurate temperature gauge.	Replace
	Impurity in water	Use soft, clean water
Overcooling.	Inoperative thermostat	Replace.
	Inaccurate temperature gauge	Replace.

4-4-3. COOLING SYSTEM

4-4-3-1. DESCRIPTION

The cooling system is of the conventional pressure type. A centrifugal pump installed in front of the timing chain cover serves to circulate the coolant

The pressure type radiator filler cap installed on the radiator operates the cooling system at higher than atmospheric pressure.

This higher pressure raises the boiling point of the coolant and increases the cooling efficiency of the radiator.

When the thermostat is closed, the coolant only circulates in the cylinder head and block for swift warming up of the engine. After it reaches normal operating temperature, the coolant circulates through the radiator also, to keep the engine at the thermostat's rated opening temperature

(1) COOLANT LEVEL

The radiator coolant level should be checked and maintained below the bottom of the filler neck when the engine is cold.

WARNING

To avoid serious personal injury, never remove radiator cap quickly when engine is hot. Sudden release of cooling system pressure is very dangerous. If it is necessary to remove radiator cap when radiator is hot, turn cap slowly counterclockwise to the first step. After all pressure in the cooling system is released, turn cap past the stop and remove it.

(2) DRAINING AND FLUSHING COOLING SYSTEM

To drain cooling system, remove radiator cap, release drain cock at bottom of radiator and drain plug on right side of cylinder block. After coolant is drained completely, close drain cock and plug and refill system kith clean soft water.

4-4-3-2. WATER PUMP

The water pump is of a centrifugal type, which is mounted on the engine front. The fan and pulley are bolted at the pulley hub.

(1) REMOVAL

(1) Drain coolant into a clean container.
(2) Remove upper and lower radiator shrouds (If equipped).
(3) Remove fan blade.
(4) Loosen fan belt.
(5) Remove water pump assembly and gasket from cylinder block.

(2) INSTALLATION

(1) Be sure to clean gasket surfaces in contact with pump and cylinder block

Always use new gaskets when installing pump assembly. Be sure to tighten bolts securely.
(2) Fill cooling system and check for leaks at pump.
(3) Install fan blade, and tighten attaching bolts securely. Install belt and adjust for specified tension.
(4) Operate engine at fast Idle and recheck for leaks.
(5) Install fan shroud.

(3) ADJUSTMENT

Fan belt should be properly adjusted at all times. A tight belt causes wear of alternator and water pump bearings. A loose belt results in improper operation of cooling fan, water pump and alternator.

Check for belt deflection between alternator and fan pulley by a force of 10 kg (22 lb).

Fan belt deflection:
8 to 12 mm (0.31 to 0.47 in)

If adjustment is necessary, loosen bolt holding alternator adjusting bar to alternator. Move alternator toward or away from engine until correct tension is obtained.

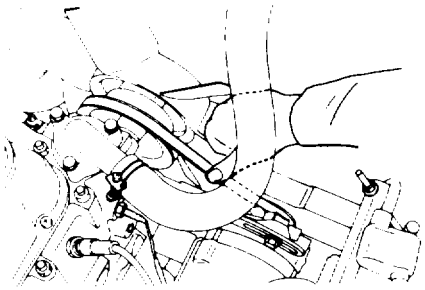


Fig. 4-111. Drive Belt Tension.

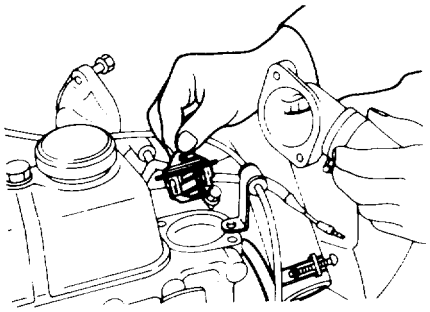


Fig. 4-112. Removing Thermostat.

4-4-3-3. THERMOSTAT

A wax pellet type thermostat is mounted in the thermostat housing at the cylinder head water outlet.

The function of the thermostat is to control the flow of coolant, facilitating fast engine warm up and regulating coolant temperature. The thermostat is designed to open and close at predetermined temperatures and, if not operating properly, should be removed and tested as described below.

(1) REMOVAL AND INSTALLATION

(1) Drain coolant partially.
(2) Disconnect upper radiator hose at water outlet.
(3) Loosen two securing nuts and remove water outlet, gasket, and thermostat from thermostat housing.
(4) After checking thermostat, replace or reinstall, with a new housing gasket.
(5) Reinstall water outlet and tighten securing nuts.
(6) Replenish coolant and check for leaks.

(2) INSPECTION

A sticking thermostat will prevent the cooling system from functioning properly. If the thermostat sticks in the open position, the engine will warm up very slowly. If the thermostat sticks in the closed position, overheating will result. Therefore, the thermostat should be inspected to make sure that It is in good condition.

(1) Submerge thermostat in hot water 5°C (9°F) above temperature specified in following table.
(2) Measure lift height of valve by inserting a screwdriver marked at point about 8 mm (0.315 in) from its tip.
(3) Remove thermostat and place in water 5°C (9°F) below temperature stamped on frame.
(4) Under above condition, valve should be closed completely. In this case, agitate water thoroughly.

If thermostat does not operate at above specified temperatures, it must be replaced because it cannot be repaired.

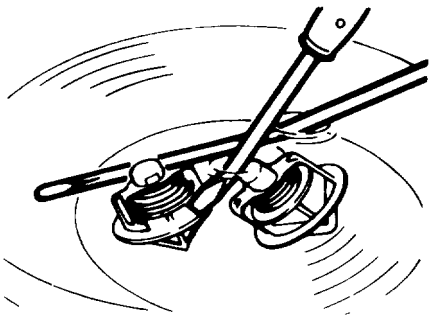


Fig. 4-113. Inspecting Thermostat.

	Standard type	Frigid type
Valve opening Temperature C (F)	76.5 (170)	88 (190)
Maximum valve lift mm/°C (in/ F)	8/90 (0.31/194)	7/1100(0.28/212)

4-4-3-4. RADIATOR

The radiator is a conventional cross flow type having right and left tanks to distribute the coolant flow uniformly through the horizontal tubes of the radiator's core.

The radiator filler cap is designed to maintain a pre-set pressure 0.9 kg/cm2 (13 psi) above atmospheric pressure. The relief valve consisting of a blow-off valve and a vacuum valve, helps to prevent coolant loss from boiling by raising the pressure on the coolant. On the other hand as the pressure is reduced below atmospheric pressure the vacuum valve allows air to re-enter the radiator, preventing the formation of a vacuum in the cooling system.

The left tank on lift trucks equipped with an automatic transmission incorporates an oil cooler for the transmission fluid.

(1) REMOVAL AND INSTALLATION

(1) Drain coolant into a clean container.
(2) Remove top panel.
(3) Remove engine hood.
(4) Disconnect radiator upper and lower hoses. On models with automatic transmission, disconnect cooler inlet and outlet lines from radiator.
(5) If equipped, remove radiator shroud retaining bolts and remove radiator shroud.
(6) Remove radiator retaining bolts and then remove radiator upward.
(7) Install radiator in the reverse sequence of removal. Note the following:

a. Insert hoses in their positions until they bottom.

b. Ensure that arrow marks on hoses are clearly visible from above when hoses are assembled.

c. Ensure that clearance between shroud and fan is even.

Note:
Be careful not to damage radiator fins and core tubes when installing.

(2) INSPECTION

Radiator cap should be checked for working pressure at regular tune-up intervals. First, check rubber seal on cap for tears, cracks or deterioration after cleaning it. Then, install radiator cap on a tester. If cap does not hold or will not release at the specified pressure, replace cap.

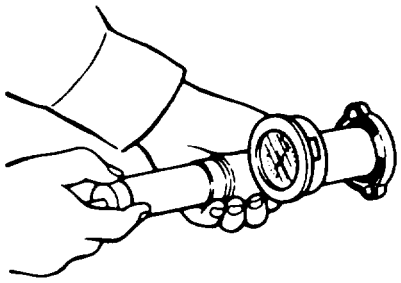


Fig. 4-114. Testing Radiator Cap.

Also, inspect radiator for leakage using cap tester and applying a pressure of 1.6 kg/cm2 (23 psi).

If leakage is detected, repair or replace radiator.

4-5-1. SERVICE DATA AND SPECIFICATIONS

Carburetor		
Type		212030-H-101
Make		NIKKI
Main jet	mm (in)	1.14 (0.0449)
Main air bleed	mm (in)	0.6 (0.024)
Slow jet	mm (in)	0.52 (0.0205)
Slow air bleed	mm (in)	P_1 2 (0.047) P_2 2.2 (0.087)
Slow economizer	mm (in)	2.00 (0.0787)
Power jet	mm (in)	0.75 (0.0295)
Float level	mm (in)	From upper face of body 22 (0.87)
Venturi diameter		
Large	mm (in)	24 (0.94)
Middle	mm (in)	14 (0.55)
Small	mm (in)	7 (0.28)
Fuel pressure	kg/cm^2 (psi)	0.22 (0.0087)

4-5-2. TROUBLE DIAGNOSES AND CORRECTIONS

In the following table, the symptoms and causes of carburetor problems and remedies for them are listed to facilitate quick repairs. There are various causes of engine malfunctions. It sometimes happens that a carburetor only appears to have some problems, when actually the electric system is at fault. Therefore, whenever the engine is malfunctioning, the electric system should be checked first before adjusting the carburetor.

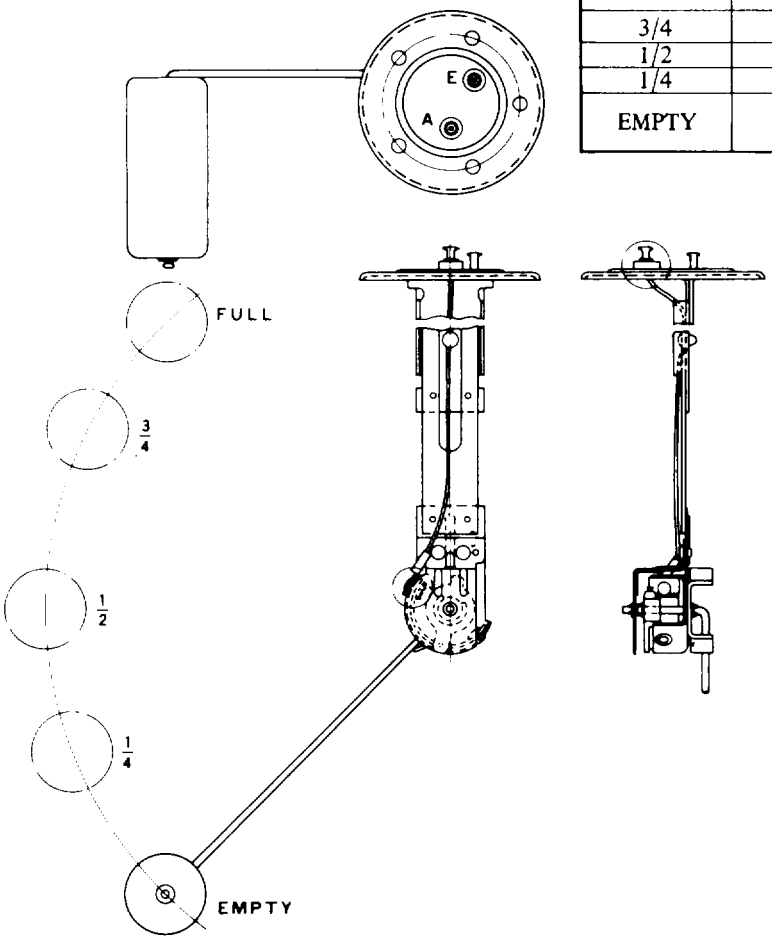
Condition	Probable cause	Corrective action
Overflow	Dirt accumulated on needle valve.	Clean needle valve.
	Fuel pump pressure too high.	Repair pump.
	Needle valve improperly seated.	Replace.
Excessive fuel consumption	Fuel overflow.	See above item.
	Each main jet, slow jet too large.	Replace.
	Each main air bleed clogged.	Clean.
	Choke valve does not fully open.	Adjust.
	Outlet valve seat of accelerator pump improper.	Lap.
	Linked opening of secondary throttle valve too early	Adjust.
Power shortage	Each main jet clogged.	Clean.
	Each throttle valve does not fully open.	Adjust.
	Idling adjustment incorrect.	Repair.
	Fuel strainer clogged.	Clean.
	Vacuum jet clogged.	Clean.
	Air cleaner clogged.	Clean.
	Diaphragm damaged.	Replace.
	Power valve operated improperly.	Adjust.
Improper idling	Slow jet clogged.	Clean.
	Each throttle valve does not close.	Adjust.
	Each throttle valve shaft worn.	Replace.
	Packing between manifold/carburetor damaged.	Replace packing.
	Manifold/carburetor tightening improper.	Correct tightening.
	Fuel overflow.	See the first item.

Condition	Probable cause	Corrective action
Engine hesitation	Main jet or slow jet clogged. By-pass hole idle passage clogged. Idling adjustment incorrect.	Clean. Clean tube. Correct adjustment.
Engine does not start	Fuel overflows. No fuel Idling adjustment incorrect. Fast idle adjustment incorrect.	See the first item. Check pump, fuel pipe and needle valve. Adjust. Adjust.

TANK UNIT AND FUEL METER

The tank unit is designed to convert the remaining fuel amount into electric current. See Fig 4-115. For this purpose, a variable resistor with Nichrome wire is used and the sliding element is linked with the float. As the float moves up and down, resistance is changed so that the amount of electric current passing across the resistor is also changed.

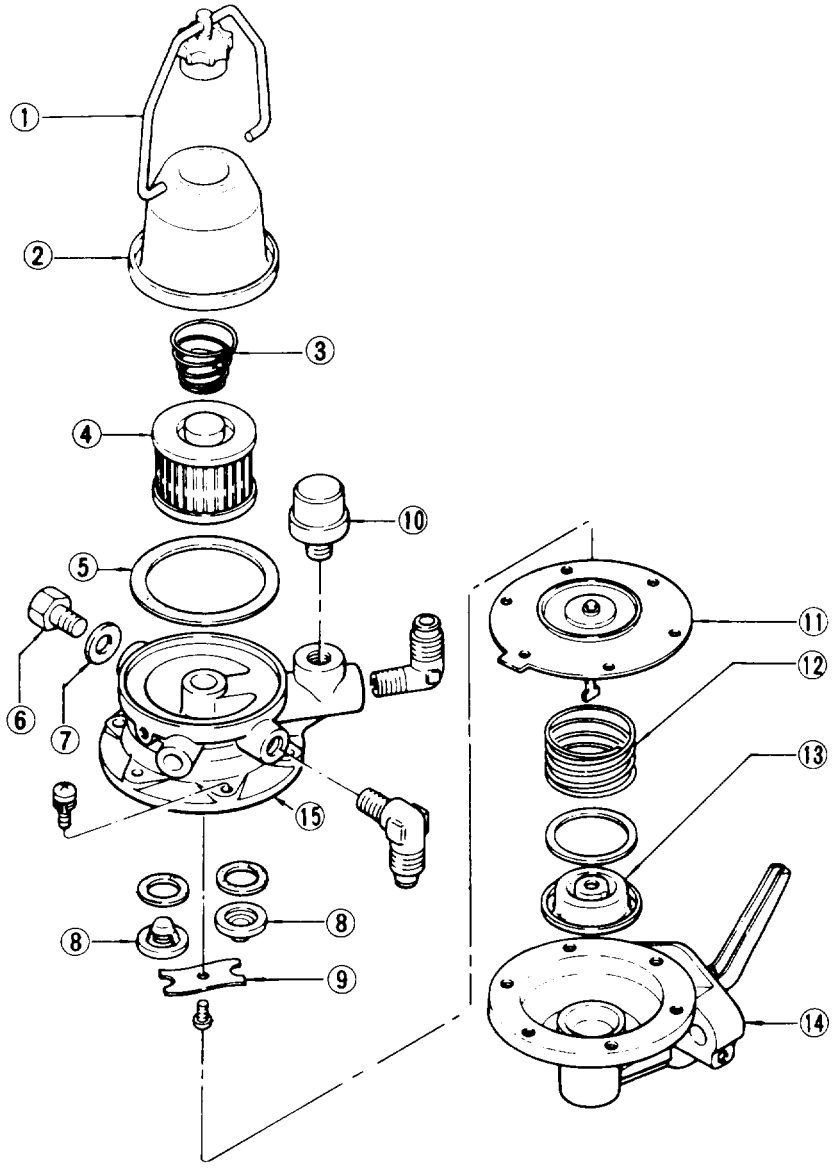
The fuel meter is a bimetal type and its pointer swings depending on the amount of electric current passing through the heating unit of bimetal. When the float is at the highest position, resistance of the tank unit is approximately 0.5 to 11Ω. This will allow much electric current to flow, so the bimetal crooks largely, causing the fuel meter pointer to swing into the lowest part. On the other hand, as the fuel level lowers and the float goes down, resistance is increased, so electric current is reduced, causing the pointer to swing to the "E" side.



Float	Resistance (Ω)
FULL	$10^{+1.0}_{-0.5}$
3/4	(19)
1/2	32 ± 3
1/4	(49.5)
EMPTY	80^{+12}_{+2}

Fig. 4-115.

4-5-3. FUEL PUMP



1. Retainer
2. Bowl
3. Spring
4. Filter
5. Gasket
6. Drain plug
7. Gasket
8. Valve
9. Valve retainer
10. Air dome
11. Diaphragm
12. Spring
13. Oil seal
14. Lower body
15. Upper body

Fig. 4-116. Fuel Pump.

4-5-3-1. DESCRIPTION

The fuel pump transfers fuel from the tank to the carburetor in sufficient quantity to meet the engine requirements at any speed or load.

The fuel pump is a pulsating type designed for easy maintenance. It consists of a body, rocker arm assembly, fuel diaphragm, fuel diaphragm spring, seal, inlet and outlet valves.

The fuel diaphragm consists of specially treated rubber, which is not affected by gasoline and held in place by two metal discs and a pull rod.

4-5-3-2. REMOVAL AND DISASSEMBLY

WARNING

Fuel and oil are slippery and can cause falls. To avoid injury, wipe up spilled fuel or oil with rags.

Remove fuel pump assembly by unscrewing two mounting nuts and disassemble in the following order.

(1) Separate upper body and lower body by unscrewing body set screws.

(2) Take off cap and cap gasket by removing cap screws.

(3) Unscrew elbow and connector.

(4) Take off valve retainer by unscrewing the two valve retainer screws and the two valves are easily removed.

To remove diaphragm. press down on its center against the spring force. With diaphragm pressed down. tilt it until the end of the pull rod touches the inner wall of body. Then, release diaphragm to unhook the push rod. Use care during this operation not to damage diaphragm or oil seal.

Drive out rocker arm pin by using a press or hammer.

4-5-3-3. INSPECTION

(1) Check upper body and lower body for cracks.

(2) Check valve assembly for wear on valve and valve spring. Blow into valve assembly with breath to examine its function.

(3) Check diaphragm for small holes, cracks or wear. and replace as necessary.

(4) Check rocker arm for wear at mating portion with camshaft.

(5) Check rocker arm pin for wear. Worn pin may cause oil leakage.

(6) Check all other components for any abnormalities and replace if necessary.

4-5-3-4. ASSEMBLY

Reverse the order of disassembly. Closely observe the following instructions.

(1) Use new gaskets.

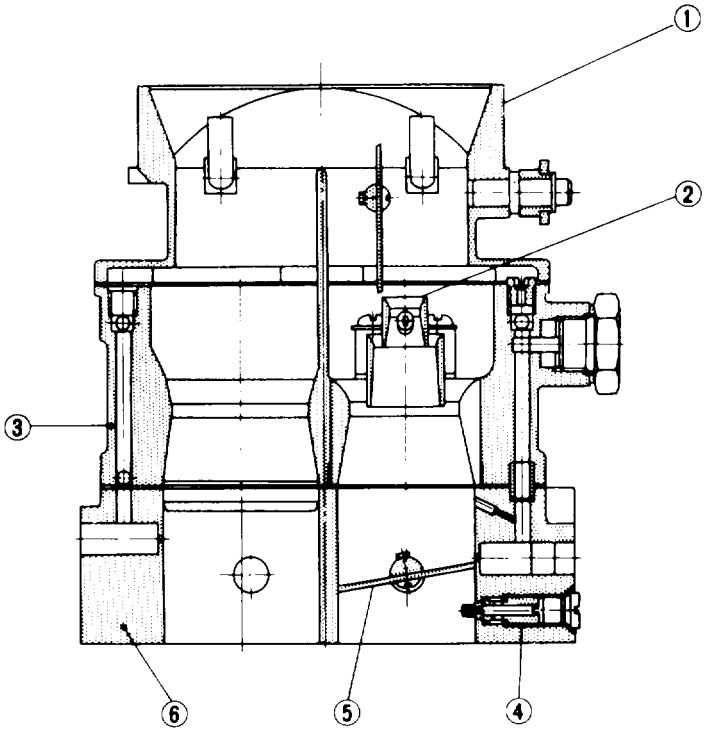
(2) Lubricate rocker arm, rocker arm link and rocker arm pin before installation.

(3) To test the function, proceed as follows:

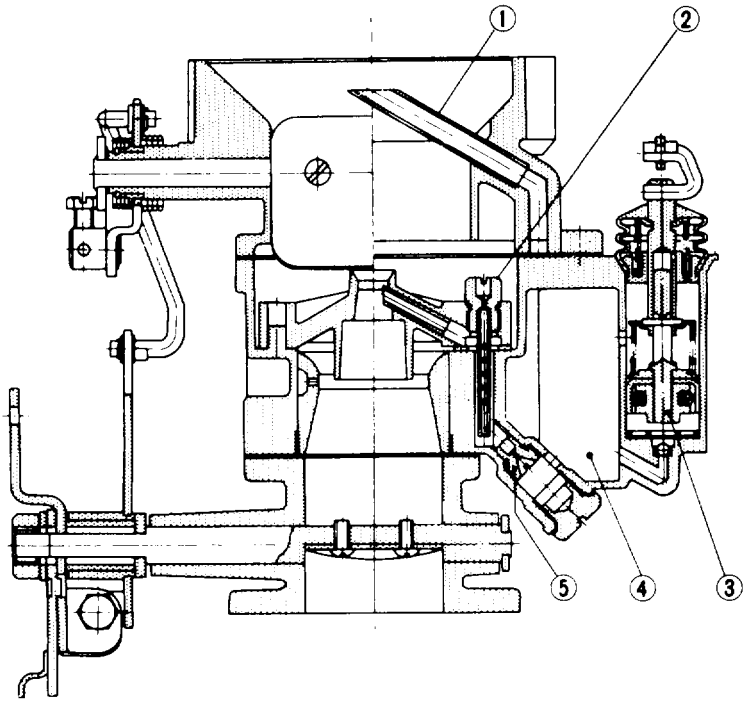
Position fuel pump assembly about 1 meter (3.3 ft) above fuel level of fuel strainer and connect a pipe from strainer to fuel pump.

Operate rocker arm by hand. If fuel is drawn up soon after rocker arm is released, fuel pump is functioning properly.

4-5-4. CARBURETOR



1. Air horn
2. Small venturi
3. Center body
4. Idle nozzle
5. Throttle valve
6. Flange



1. Air vent
2. Main air bleed
3. Accelerator pump
4. Float chamber
5. Main jet

Fig. 4-117. Carburetor.

4-5-4-1. REMOVAL AND INSTALLATION

(1) Remove air duct assembly of air cleaner.
(2) Remove fuel pipe.
(3) Remove vacuum control tube.
(4) Remove accelerator and choke wires.
(5) Remove carburetor.
(6) Install in reverse sequence of removal.

4-5-4-2. DISASSEMBLY

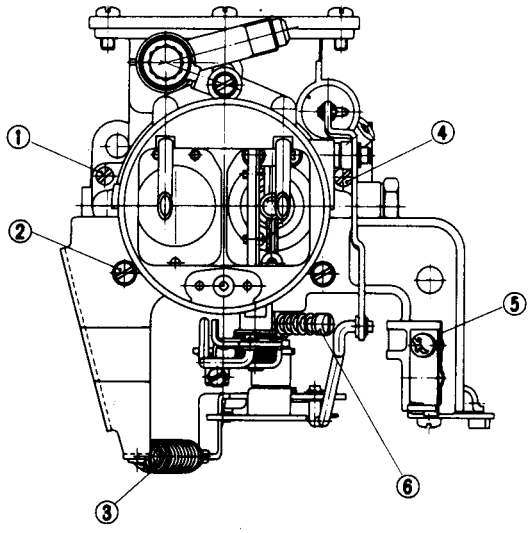
To remove nuts and screws, use suitable wrenches and screw drivers, taking care not to scratch parts. Disassembled components should be placed in order for proper reassembly.

(1) CARBURETOR DISASSEMBLY

(1) Remove throttle return spring.
(2) Remove choke wire holder and throttle wire guide.
(3) Remove start connecting rod.
(4) Remove pump connecting rod and pump arm.
(5) Remove throttle shaft set nut, and remove 1st throttle lever, 1st throttle arm and starting throttle lever.
(6) Remove air horn.
(7) Remove body from flange set.

(2) BODY

(1) Remove the four screws holding the float cover.
(2) Remove the float cover and gasket.
(3) Remove the float pin collar, float and float valve assembly.
(4) Release union bolt and take off gasket, fuel connector assembly, strainer and fuel connector gasket.
(5) Loosen float valve seat and take it off together with float valve seat gasket.
(6) Remove main air bleed and take out small venturi.
(7) Remove slow jet and slow air bleed.
(8) Remove pump outlet valve plug and pump nozzle plug.



1. Slow & step jet passage plug
2. Screw air horn set
3. Throttle return spring
4. Slow jet
5. Choke wire holder
6. Idle adjust screw

Fig. 4-118. Carburetor.

(9) Take out weight and ball of pump outlet valve. When installing, place ball on inner side.
(10) Take out pump strainer clip at pump cylinder base and take out strainer and ball of inlet valve.
(11) Take off main passage plug and remove main passage plug and remove main jet, respectively.

(2) AIR HORN

(1) Remove choke valve connecting rod.
(2) Releasing choke valve set screw, remove choke valve.

(3) Withdraw choke valve shaft.
(4) Remove choke shaft collar, choke shaft arm spring, choke lever ring, choke lever assembly and choke lever return spring, in turn.

(3) FLANGE

(1) Remove idle adjusting screw together with spring.
(2) Remove slow port plug.
(3) Releasing throttle valve set screw, remove throttle valve.

(4) CLEANING

Disassembled components should be cleaned in P-D-680. Clean hollow parts, such as fuel passage, of dirt by blowing out with compressed air. Do not use metal such as a piece of wire to clean the fine holes of jets.

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area. Avoid contact with skin, eyes, and clothes and don't breathe vapors. Do not use near open flame or excessive heat. If you become dizzy while cleaning with solvent, get fresh air immediately and get medical aid. If contact with skin or clothing is made, flush with water. If contact with eyes is made, wash your eyes with water and get medical aid immediately. Compressed air used for cleaning purposes will not exceed 30 PSI. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

(5) INSPECTING

(1) Inspect float valve and seat contacting face. Replace if necessary.
(2) Check filter for clog and deformation.
(3) Check jets and air bleeds for clog and looseness.
(4) Check idle adjusting screw and seat contacting part for damage.
(5) Check throttle valve shaft for wear.
(6) Inspect for smooth movement of linkage parts.
(7) Fill float chamber with gasoline and inspect injecting condition of gasoline from accelerating nozzle, by moving throttle lever.
(8) Depress diaphragm connecting rod of diaphragm chamber assembly and block up vacuum passage with a finger. Then release the rod and check the circumference of diaphragm and for leaks.

4-5-4-3. ASSEMBLY

When assembling the carburetor, gaskets and packings should be replaced with new ones.

(1) CARBURETOR ASSEMBLY

Assembly is carried out by reversing the disassembly procedure. Choke linked opening and primary and secondary linked opening should be adjusted. (See 5-4-4 "Adjustment".)

(2) AIR HORN

Assembling the air horn is a reversal of the disassembling procedure. Install and secure the choke valve tightly after adjusting the position and direction of the valve so that it is fully closed. Apply Loc-Tite® to set screws to keep them from coming loose.

(3) FLANGE

Assemble flange by reversing the disassembling operations. When installing the primary and secondary valves, adjust them so that they are fully closed, and in the same manner as in the choke valve, tighten set screws after applying bonding agent to the screws. Adjust idle adjusting screw and throttle adjusting screw.

4-5-4-4 ADJUSTMENT

(1) ADJUSTMENT OF STARTING INTERLOCK VALVE OPENING

Adjustment should be performed with choke valve fully closed. Without disturbing above setting, check to determine if opening angle of primary throttle valve is specified value.

Primary throttle valve opening angle:

18.5°

If necessary, bend choke connecting rod as required.

(2) ADJUSTMENT OF FLOAT LEVEL

Adjust the position of float (up position). Place the body horizontally with float chamber facing upwards and keep the body inclined 10 to 15° downwards at upper side of float chamber. The float then should be horizontal.

Adjustment is made by increasing or decreasing the metal plate gaskets at the float valve seat.

Adjust the position of float (down position).

Keep float chamber in its original posture and lower the float naturally.

Adjustment is made by bending float stopper.

Refer to Fig. 5-4.

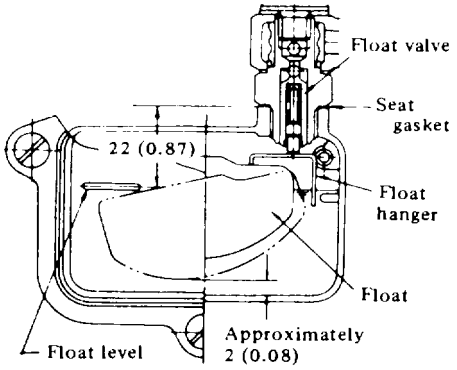


Fig. 4-119. Adjusting Float Level.

(3) IDLE ADJUSTMENT

(1) Check to be sure that the float level is correct while engine is at idle speed.

(2) Using a suitable screwdriver, turn out idle adjusting screw approximately two or three turns, starting from fully closed position. Turn in throttle adjusting screw two or three turns and start engine.

(3) Turn out throttle adjusting screw gently until specified engine idle speed is approximately obtained.

Turn idle adjusting screw in or out until engine runs smoothly at highest speed.

(5) Turn out throttle adjusting screw until specified engine speed is obtained.

(6) Readjust idle adjusting screw until engine runs smoothly at the highest speed (with the highest vacuum reading).

(7) Then, throttle adjusting screw must be adjusted so that engine speed is 20 rpm faster than specified.

(8) Finally, turn in idle adjusting screw until specified engine speed is attained.

WARNING

Carbon monoxide gas is a colorless, odorless, poisonous, deadly gas produced by incomplete combustion of any carbon containing material. It occurs in the exhaust fumes of fuel burning internal combustion engines, and becomes dangerously concentrated under conditions of inadequate ventilation.

Note:

a. Items (7) and (.8): Best method to reduce carbon monoxide in exhaust emission.

b. Do not attempt to screw down idle adjusting screw completely. If screw tip is damaged, it will cause engine malfunctions.

Engine idle speed rpm	550
Engine manifold vacuum at idle speed mmHg (inHg)	-430 (-16.9)

(4) JET

The larger numbers punched on jets to measure gasoline indicate richer fuel-air mixture, and the smaller numbers indicate leaner mixture. Main and slow air bleeds are provided with passages to let air in to make lean fuel-air mixture.

The larger numbers indicate leaner mixture, and the smaller numbers indicate richer mixture.

This should be noted when the conditions require a change of mixture, such as high altitude.

4-6-1. SERVICE DATA AND SPECIFICATIONS

SERVICE DATA

Maximum engine speed under no-load	rpm	2,950 to 3,080 - H20PU240
Maximum engine speed under load	rpm	2,800 to 3,000
No. of allowable repetitions of hunting*		Max. 3 times, or within 9 seconds

SPECIFICATIONS

Type		Pneumatic
Speed control system		By controlling mixture amount
Operation of control mechanism		By suction negative pressure
Outside dia. of stabilizer piston	mm (in)	17 (0.669)
Cam spring		
Dia. of wire	mm (in)	1.3 (0.051)
Dia. of coil	mm (in)	9 (0.354)
Active coils when mounted (standard)		17
Total turns of coil		22

*Sudden fluctuation of engine speed with vibration.

4-6-2. TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
Insufficient power	Broken cam band. Broken or fatigued spring.	Replace.
Lift truck speed too slow (but lifting time is good, or hunting is accompanied).	Improper adjustment of cam spring. Sticking of stabilizer piston.	Adjust. Clean, correct, or replace.
Lift truck speed too low (takes too much time for lifting).	Incorrect adjustment of cam spring. Fatigued cam spring.	Adjust. Replace.
Too much time for lifting (lift truck speed is good).	Improper adjustment of cam spring.	Adjust.
Lift truck speed too high	Incorrect adjustment of cam spring. Sticking of stabilizer piston. Sticking of governor valve shaft.	Adjust. Clean, correct, or replace. Clean, correct, or replace.
Excessive repetition of hunting*(should be within three times, or within 9 seconds).	Improper adjustment of cam spring. Sticking of stabilizer piston. Sticking of governor valve shaft.	Adjust. Clean, correct, or replace. Clean, correct, or replace.

*Sudden fluctuation of engine speed with vibration.

4-6-3. GOVERNOR

4-6-3-1. DESCRIPTION

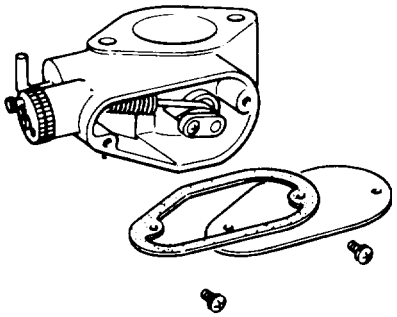


Fig. 4-120. Governor (when disassembled)

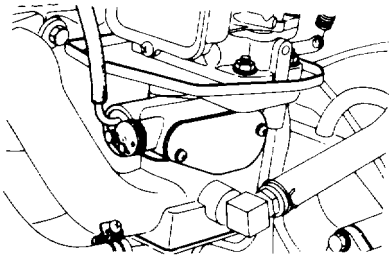


Fig. 4-121. Governor(when mounted)

4-6-3-2. CONSTRUCTION

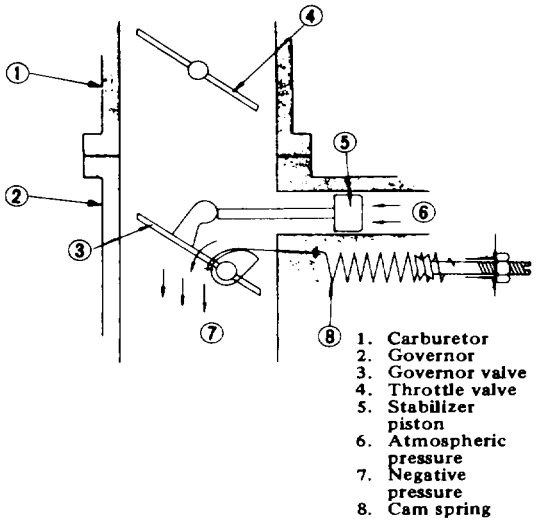


Fig. 4-122. Construction Diagram of Governor

In the lift truck, the output of the engine is used both for driving the lift truck and for driving the hydraulic mechanism to handle cargo. So the load may suddenly decrease regardless of the operation of the accelerator, causing a sudden increase of engine speed, which tends to cause over-running. The governor serves to restrict the maximum engine speed under no load to prevent over-running, and at the same time, it acts to hold the engine output within its rated capacity. It also prevents a sudden change in engine speed that results from fluctuations of load.
sudden change in engine speed that results from fluctuation of load.

This governor is a pneumatic type which is simple in construction and easy in operation.

In this governor, a governor valve which is automatically actuated by negative pressure of suction from the suction passage between the carburetor and the intake manifold. The amount of mixing air is regulated, and the engine speed is in turn controlled by the action of this governor according to the operating condition of the engine.

The extent of the governor opening is controlled by the balance of the following two forces:

Force to open governor valve.

Exerted by cam and cam spring.

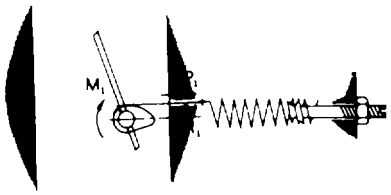
Force to close governor valve.

Exerted by pressure difference between both sides of valve plus force of stabilizer piston.

4-6-3-3. OPERATION

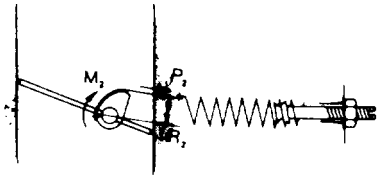
(1) Force to open the valve exerted by the cam and cam spring.

This force always tends to open the valve, and exerts certain action even when the valve is fully opened. When the valve moves towards the closing direction, the spring tension increases and the working radius of the cam extends, producing a further increase in the force of the cam and cam spring which tends to open the valve.



$M_1 = P_1 \times R_1$

Fig. 4-123. Condition under Full Opening of Valve



$M_2 = P_2 \times R_2$

$P_2 > P_1$ therefore: $M_2 > M_1$

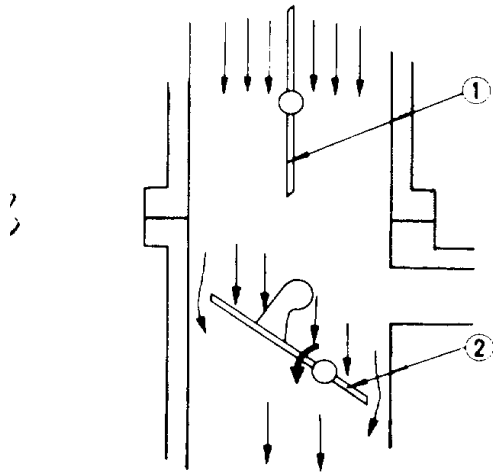
$R_2 > R_1$

Fig. 4-124. Condition under Total Closure of Valve

(2) Force to close the valve produced by the pressure difference between both sides of it.

This force acts more strongly when the throttle axle of the carburetor is wide open and the engine is operating at high speed. The rotation axis of the governor valve is shifted from the center of the valve in such a direction that the negative pressure suction will tend to close the valve. When the revolution of the engine increases with the throttle valve of the carburetor wide open, the pressure difference between both sides of the governor valve increases with a resultant increase in the force which tends to close the valve.

This force sharply increases when the governor valve approaches its closed position, but at the same time, the counteraction to open the valve exerted by the cam and cam spring also rapidly increases, bringing about a balance between these two forces. If the cam and cam spring are adjusted improperly, good balance is destroyed and causes such problems as overrun, engine stall, or hunting: ("Hunting" means sudden fluctuation of engine speed accompanied with vibration).



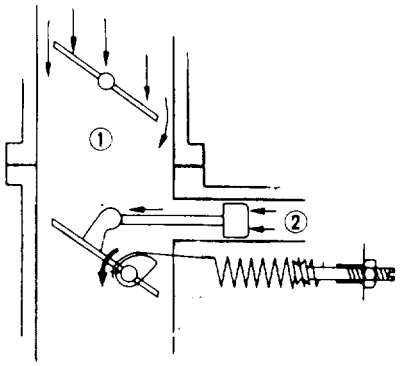
1 Throttle valve of carburetor
2 Governor valve

Fig. 4-125.

(3) Force to close the valve due to the stabilizer.

This force is more strongly exerted when the throttle valve of the carburetor is opened comparatively a little, and the engine is rotating at a high speed. When the opening of the throttle valve of the carburetor is relatively small, the volume of air suction is small and the pressure difference between both sides of the governor valve does not increase in spite of high revolution of the engine, disabling the valve to close. The stabilizer is provided to compensate for this action.

The smaller the opening of the throttle valve of the carburetor and the higher the revolution of the engine, the larger the negative pressure suction becomes and the stronger the sucking force becomes on the stabilizer piston Therefore, the force of the piston overcomes the combined force of the cam and cam spring and moves the governor valve towards the closing direction. The stabilizer piston, at the same time, serves to prevent hunting, because it always pushes the valve due to the force exerted by sucking action of negative pressure.



1 Negative pressure is large
2 Atmospheric pressure supplied by air cleaner

Fig. 4-126.

Figs. 6-8 and 6-9 show the operation of the governor valve under various operating conditions of the engine. In these figures, the force to open the valve exerted by the cam and cam spring is indicated by a dotted arrow, the force to close the valve produced by the pressure difference between both sides of the valve is shown by a white arrow, and that effected by the stabilizer piston is expressed by a black arrow; and the size of these arrows indicates the strength of force under each condition.

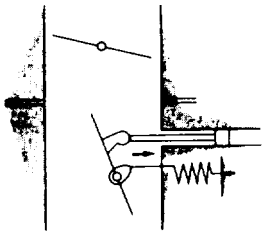


Fig. 4-127.

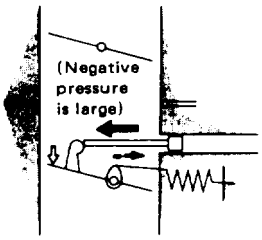


Fig. 4-128. Negative Pressure is Large

a. When the engine is stalled.

The force to close the governor valve is absent, so it is fully opened by the action of the cam spring.

b. During idling.

Owing to a large negative pressure below the throttle valve, the stabilizer piston tends to be sucked out, causing the governor valve to be almost closed.

c. When the carburetor throttle valve is partially opened.

When the engine is rotating at low speed, the pressure difference between both sides of the governor valve is small, exertising only a small force on the stabilizer piston, so the governor valve is kept fairly open.

With the increase of engine speed, the pressure difference between both sides of the governor valve as well as the force on the stabilizer piston increases, causing the valve to close.

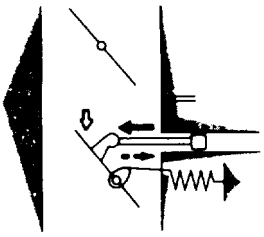


Fig. 4-129.

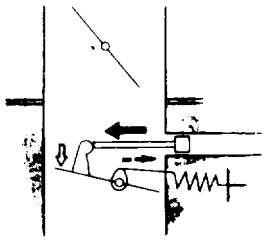


Fig. 4-130.

d. When the carburetor throttle valve is full open.

The valve is nearly the fully open position at low engine speeds, but with the increase of engine rotation, it begins to close before the rotation reaches the speed corresponding to the rated output, and finally the valve is almost totally closed when the rotation of the engine attains near maximum no-load speed.

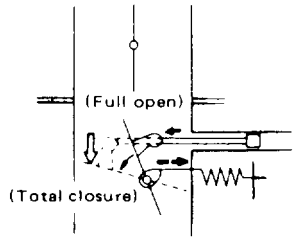


Fig. 4-131.

e. When load fluctuates.

If the load suddenly increases during a stable operation of the engine with the governor valve properly opened, the engine speed at first somewhat decreases But this speed reduction lessens the pressure difference between both sides of the governor valve, which in turn diminishes the sucking action on the stabilizer piston and acts to open the valve, with the resulting increase in torque, preventing the reduction of engine speed.

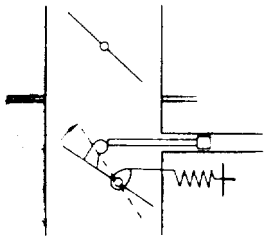


Fig. 4-132.

4-6-3-4. REMOVAL AND INSTALLATION

(1) Remove air cleaner.
(2) Remove ventilation hose.
(3) Disengage air duct at carburetor, and remove it together with air cleaner as an assembly.
(4) Disengage accelerator ware from carburetor.
(5) Disengage choke control wire from engine and transmission.
(6) Disconnect fuel line and remove carburetor.

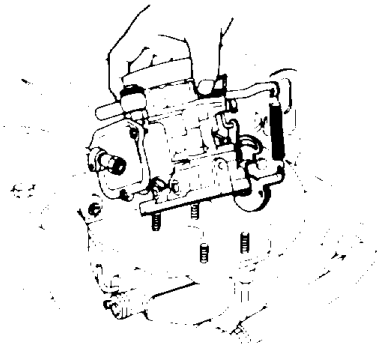


Fig. 4-133. Removing Carburetor

(7) Remove fuel receiver plate, gasket and spacer.

(8) Remove pneumatic governor.

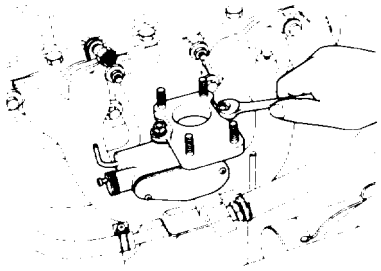


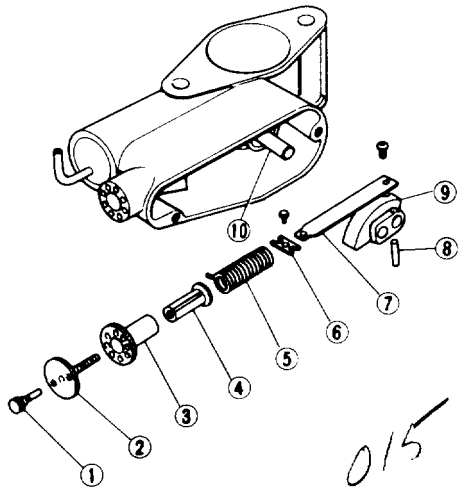
Fig. 4-134. Removing Pneumatic Governor

(9) Installation is in the reverse order of removal.

4-6-3-5. DISASSEMBLY

Do not disassemble governor except when it is necessary. Particularly avoid disassembling cam and cam plate because their setting is very delicate.

(1) CAM AND CAM SPRING



1. Adjusting handle stopper
2. Adjusting screw handle
3. Adjusting spring handle
4. Adjusting sleeve
5. Cam spring
6. Spring hanger plate
7. Cam band
8. Taper pin
9. Cam assembly
10. Governor valve shaft

Fig. 4-135. Cam and Cam Spring Disassembled

(1) Take off cover of cam chamber.

Note

Place a matching mark as shown in Fig. 6-17 with paint across adjusting screw handle, adjusting spring handle, and body in order to facilitate adjustment after assembly.

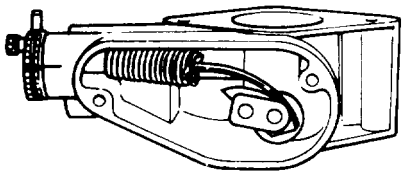


Fig. 4-136. Scribing a Mark

(2) Remove adjusting handle stopper after un fastening its lock wire.
(3) Screw out adjusting screw handle by turning it counterclockwise.

Note

In order to facilitate adjustment after assembly, hold adjusting spring handle with one hand to prevent if from rotating together, and loosen adjusting screw handle. Note number of revolutions by aid of mating mark before it comes off.

(4) Pull off adjusting spring handle.

(5) Remove cam stopper bolt by loosening lock nut.

(6) Push out taper pin which is securing cam on shaft using a screwdriver from underside, and then pull it out from upper side.

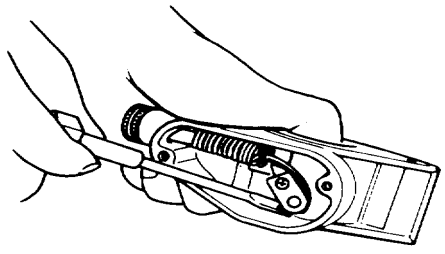
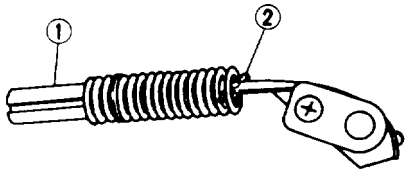


Fig. 4-137. Removing Taper Pin

(7) Take out cam from shaft together with cam band, spring, and adjusting sleeve, paying attention not to deform cam band.

Note

When disassembling further, count active coils of spring, and keep in mind screwed condition of spring hanger block and adjusting sleeve which are located at both ends of spring, and relative position of groove of adjusting sleeve and cam band. These steps will serve to facilitate adjustment after assembly.



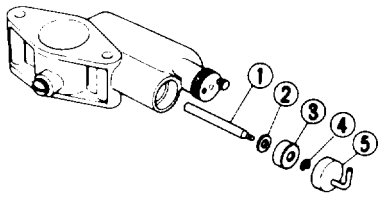
1 Adjusting sleeve
2 Spring hanger plate

Fig. 4-138. Mounted Condition of Spring

(8) Remove adjusting sleeve, cam spring and cam band.

(2) STABILIZER PISTON

Cap screw and air pipe can be taken out as a unit. Then, remove piston.



1. Stabilizer rod
2. Packing
3. Piston
4. E-ring
5. Air pipe (Cap screw)

Fig. 4-139. Stabilizer Piston Disassembled

(3) GOVERNOR VALVE

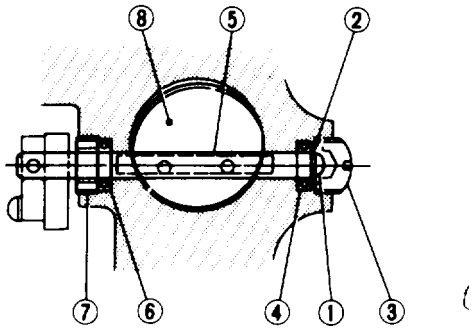
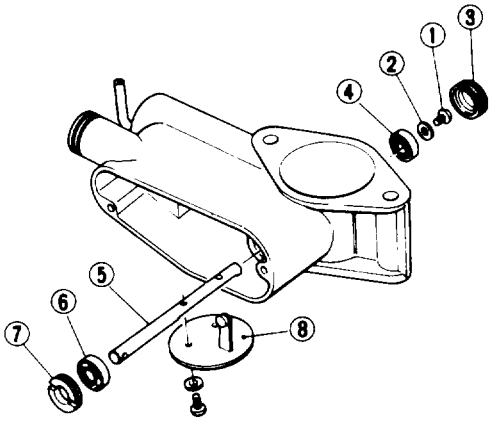


Fig. 4-140. Relative Position of Governor Valve, etc.



1. Screw
2. Plain washer
3. Bearing screw outer
4. Ball bearing
5. Valve shaft
6. Ball bearing
7. Bearing screw inner
8. Governor valve

Fig. 4-141. Governor Valve, etc. Disassembled

(1) Remove governor valve.
(2) Remove bearing screw outer.
(3) Remove screw and washer securing valve shaft.
(4) Slightly tap valve shaft at cam chamber.
side, and it can be driven out together with ball bearing.
(5) Turn bearing screw inner at cam chamber side counterclockwise, and remove ball bearing at cam-chamber side.

4-6-3-6. INSPECTION

After disassembly, thoroughly wash away dirt and dust of components and then inspect them carefully. Refer to following table for inspection and repair:

Parts	Inspection points	Corrective action
Governor body	Scratch on sliding surface of piston. Excessive wear of sliding surface of piston. Wear limit: 0.05 mm (0.0020 in) max. Standard dimension: 17 to 17.02 dia. mm (0.6693 to 0.6701 in)	Burnish with emery paper or whetstone. Replace if flaw is beyond repair. Replace if worn above limit.
Piston	Scratch on sliding surface. Excessive wear of sliding surface. Wear limit: 0.05 mm(0.0020 in) max. Standard dimension: 16.9 to 17.0 mm (0.6654 to 0.6693 in) dia.	Burnish with emery paper or whetstone. Replace if flaw is beyond repair. Replace if worn above limit.
Cam spring	Carefully inspect for damage. Fatigue.	Replace if damaged. Replace if clearance exists between adjacent turns under free condition.

4-6-3-7. ASSEMBLY

Paying particular attention to the following points, reassemble the parts by reversing the procedure for disassembly.

(1) GOVERNOR VALVE AND VALVE SHAFT

(1) Coat bearing with bearing grease, and assemble valve shaft, bearing, bearing screw on body.
('2) Place body with its mounting flange upward, and also place valve shaft with its recessed portion upward on a work table.
(3) Place valve on shaft in such a position that projection of valve will coincide with hole in stabilizer. and temporarily tighten valve on shaft with washer and screw.
(4) Adjust position of valve in such a way that. when valve is fully closed, clearance at both ends of major axis is zero, and clearance at both ends of minor axis will be of equal value. Then finally tighten valve on shaft. See Fig. 6-23. After assembly, make certain that shaft rotates with ease.

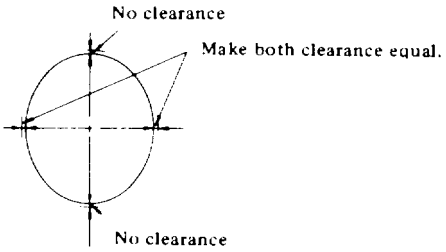
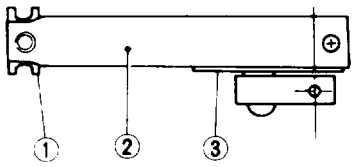


Fig. 4-142. Correct Position of Valve

(2) CAM BAND

Paying attention to direction of cam band, first assemble spring hanger plate. See Fig. 6-24.



1 Spring hanger plate
2 Cam band
3 Cam

Fig. 4-143. Assembling Cam Band

(1) Attach spring hanger plate on cam band and stake it.
(2) Press cam band along shape of cam band with linger and screw it on cam

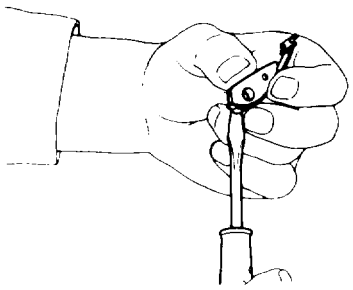


Fig. 4-144. Attaching Cam Band on Cam

(3) MOUNTING OF CAM SPRING

Paying attention to direction of spring first attach spring hanger plate.
(1) While holding spring hanger plate with a finger, screws in spring, one to one and a half turns. In this process, bend at opposite end of spring, should be brought into position as shown in Fig 6 26.

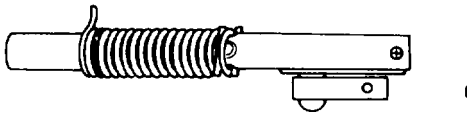
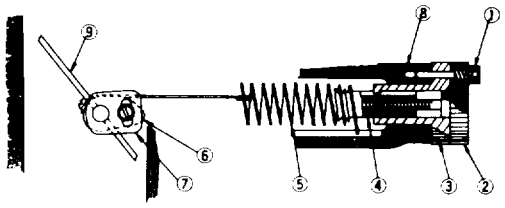


Fig. 4-145. Mounting Cam Spring and Adjusting Sleeve

(2) Then, while holding spring with finger, screw in adjusting sleeve in such a manner that active coils of spring and position of sleeve groove will be identical with those before disassembly If unknown, make number of active coils of spring 17 to 18

4-6-3-8. ADJUSTMENT

(1) EXPLANATION OF ADJUSTING MECHANISM



1. Adjusting handle stopper
2. Adjusting screw handle
3. Adjusting spring handle
4. Adjusting sleeve
5. Cam spring
6. Cam
7. Cam adjusting plate
8. Body
9. Governor valve

Fig. 4-146. Adjusting Mechanism

(1) When adjusting screw handle is turned, adjusting sleeve slides forward or backward, varying the tension of the cam spring. Therefore, maximum engine speed under no-load can be adjusted by this means without giving appreciable influence on the output characteristics of engine.

(2) When adjusting spring handle is turned: adjusting sleeve advances or receeds with each rotation, changing both the tension and constant load of the spring. Therefore, output characteristics of the engine varies in accordance with the maximum engine speed under no-load.

(3) If the relative position of the cam and cam spring is changed, the output characteristics change to a large extent. But, because this adjustment is very delicate, avoid it as much as possible.

(2) PRELIMINARY ADJUSTMENT

(1) Turn adjusting spring handle so that active coils of spring are 17 to 18.

(2) Turn adjusting screw handle clockwise 12 to 13 resolutions from the position where it would be disengaged from adjusting sleeve.

Note

If mechanism has been disassembled once, restore condition of preliminary adjustment to that before disassembly. This will serve to reduce number of trial adjustments thereafter.

(3) WARMING-UP OF ENGINE

After preliminary adjustment, operate engine until its oil and water temperatures attain 70 to 80° C (158 to 176° F).

(4) FINAL ADJUSTMENT

Before proceeding to final adjustment, completely adjust engine operation with respect to such points as valve clearance, advance angle of ignition, distributor point gap, revolution during idling, etc. Also be sure to loosen cam stopper bolt.

(1) Adjusting maximum engine speed under no-load.

a. Shift transmission gears into neutral so that engine will bear noload, then fully open throttle valve of carburetor.

b. Under this condition, bring engine speed within allowable range (H20PU240 : 2950 3080 rpm) by turning adjusting screw handle (outside handle.)

Note

Turn adjusting screw handle clockwise to increase, or counterclockwise to decrease engine speed. Turning adjusting screw handle by one-eighth of a revolution will change engine speed by about 30 rpm.

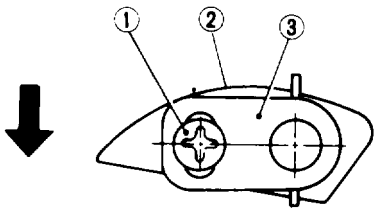
(2) Adjusting maximum engine speed under load.

(1) Shift transmission gears into neutral. Fully open carburetor throttle valve under a condition where mast assembly is tilted fully backward with hydraulic control lever.

a. Adjust engine speed by turning adjusting spring handle (inside handle) so that engine speed is within allowable range (2,800 to 3,000 rpm). Then re-adjust maximum engine speed under no load.

(3) Check for hunting

The term "Hunting" means sudden fluctuation of engine speed accompanied by vibration. Be sure to check engine for hunting when maximum engine speed under no-load as well as rated output has been adjusted.



1. Cam set screw
2. Cam
3. Cam adjusting plate

Fig. 4-147.

a. Stop hydraulic mechanism, place gear in neutral, and idle engine.

b. Suddenly depress accelerator pedal under this condition, and make certain that hunting ceases after repeating three times or less, or within 9 seconds.

If hunting repeats more that three times, or within 9 seconds, proceed as follows:

a. Turn adjusting spring handle by one-eighth of a revolution counterclockwise, and every time begin with adjustment of maximum engine speed under no-load as described in paragraph "a." above.

b. If hunting still remains it may be eliminated by adjusting the cam, but this should be avoided as far as possible because it is very delicate and is liable to affect engine performance.

c. Shift cam set screw in direction of arrow mark in Fig. 6-28 and secure cam. By doing so, hunting may be remedied easily.

d. After adjustment, begin once more with adjustment of maximum no-load speed as described above.

e. Place a piece of wire through the hole provided in the head of the adjusting handle stopper and through the hole in the body to prevent handle stopper from turning.

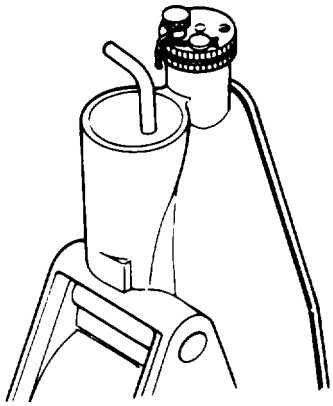


Fig. 4-148. Holding Adjusting Handle Stopper from Turning

4-7-9. SPARK PLUGS

4-7-9-1. DESCRIPTION

The spark plugs are of the resistor type, having 14 mm (0.55 in) threads and 0.7 to 0.8 mm (0.028 to 0.031 in) gap. Inspection and cleaning should be made in accordance with the periodic maintenance schedule.

Note

All spark plugs installed on an engine, must be of the same brand and heat range.

4-7-9-2. INSPECTION

(1) Remove spark plug wire by pulling on boot, not on wire itself.

(2) Remove spark plugs.

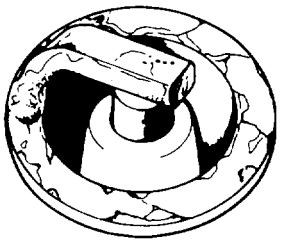
(3) Check electrodes and inner and outer porcelains of plugs, noting the type of deposits and the degree of electrode erosion. See Fig. 7-69.

Normal: Brown to grayish-tan deposits and slight electrode wear indicate correct spark plug heat range.

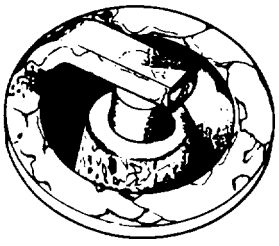
Carbon fouled: Dry fluffy carbon deposits on the insulator and electrode are mostly caused by slow speed driving, weak ignition, too rich a fuel mixture, dirty air cleaner, etc.
It is advisable to replace with plugs having hotter heat range.

Oil fouled: Wet black deposits show excessive oil entrance into combustion chamber through worn rings and pistons or excessive clearance between valve guides and stems. If the same condition remains after repair, use a hotter plug.

Overheating: White or light gray insulator with black or gray brown spots and bluish burnt electrodes indicate engine overheating. Moreover, the appearance results from incorrect ignition timing, loose spark plugs, low fuel pump pressure, wrong selection of fuel, a hotter range plug, etc. It is advisable to replace with plugs having colder heat range.

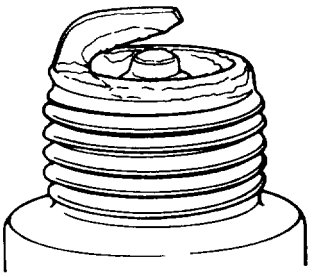


Normal



Overheating

Carbon fouled



Life

Fig. 4-149. Spark Plug

(4) After cleaning, dress electrodes with a small fine file to flatten the surfaces of both center and side electrodes in parallel. Set spark plug gap to specification.
(5) Install spark plugs and torque each plug to specified value.

Tightening torque:
1.8 to 2.4 kg-m
(13 to 17 ft-lb)

(6) Connect spark plug wires.

4-7-9-3. CLEANING AND REGAPPING

Clean spark plugs in a sand blast type cleaner Avoid excessive blasting. Clean and remove carbon or oxide deposits, but do not wear away porcelain. If deposits are too stubborn, discard plugs.

After cleaning spark plugs, renew firing surface of electrodes with file mentioned above. Then gap spark plugs to specified value using a round wire feeler gauge. All spark plugs new or used should have the gap checked and reset by bending ground electrode.

Spark plug gap:
0.7 to 0.8 mm
(0.028 to 0.031 in)

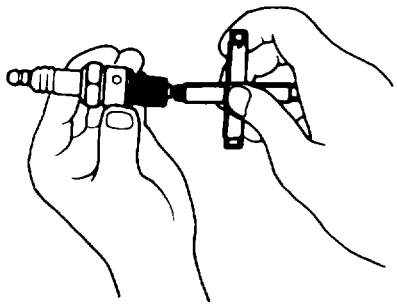
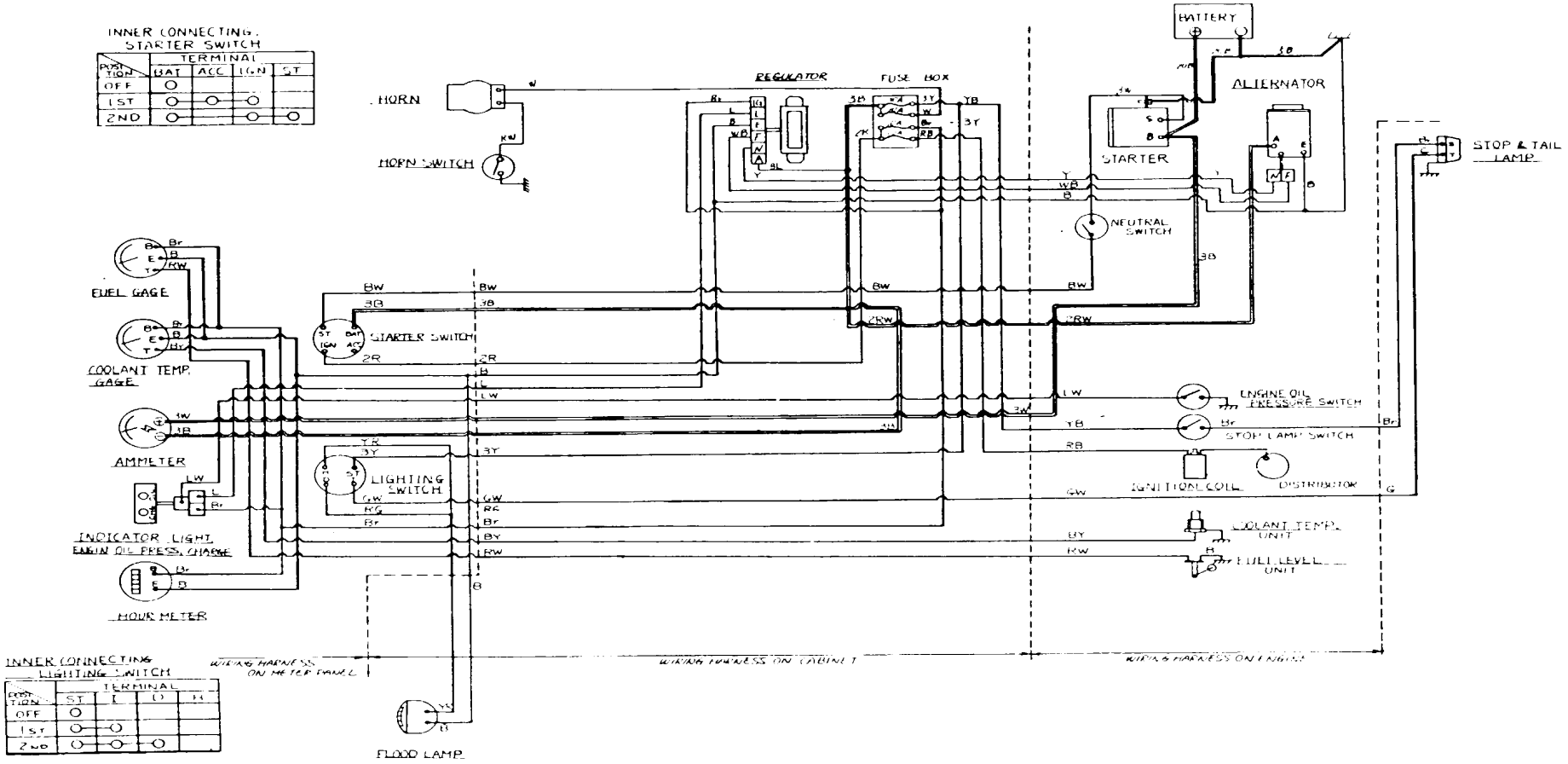


Fig. 4-150. Setting Spark Plug Gap

WIRING SCHEMATIC



4-7-1. SERVICE DATA AND SPECIFICATIONS

4-7-1-1. SPECIFICATIONS

(1) Starting motor

Make		MITSUBISHI
Model		MEA 13-1
Nominal output	kw	0.8
System voltage	V	12
Weight	kg (lb)	5.1(11)
No load		
Terminal voltage	V	10.5
Current	A	Less than 60
Revolution	rpm	More than 5,000
Load		
Terminal voltage	V	6
Current	A	Less than 415
Torque	kg-m (ft-lb)	1.05 (7.6)
Pinion drive out voltage	V	Less than 8

(2) Alternator

Make		MITSUBISHI
Model		AH2035N1
Nominal rating		12V-35A
Ground polarity		Negative
Revolution	rpm	1,000 to 13,500
Minimum revolution under no load	rpm	Less than 980
Output current	A (V/rmp)	27.5 (14/2,500)
Pulley ratio		2.06
Applied regulator model		RLB2220BI

(3) Distributor

Make		HITACHI
Model		D413-99
Applied engine		H20
Rotating direction		Counterclockwise
Dwell angle	degree.	49° to 55°
Condenser capacity	µ/F	0.20 to 0.24
Weight	kg (lb)	1.0 (2.2)

(4) Ignition coil

Make	HANSHIN
Model	HP5-10E

Primary voltage	V	12
Spark gap	mm (in	More than 7 (0.28)
Primary resistance at 20°C (68°F)	Ω	3.4 to 4.2
Secondary resistance at 20°C (68°F)	KΩ	8

4-7-1-2. SERVICE DATA

(1) Starting motor

Brush		
Brush length	mm (in)	18.5 (0.728)
Wear limit	mm (in)	7.0 (0.276)
Brush spring tension	kg (lb)	1.4 to 1.8 (3.1 to 4.0)
Commutator		
Outer diameter	mm (in)	38.7 (1.524)
Wear limit	mm (in)	2 (0.079)
Taper limit	mm (in)	0.05 (0.0020)
Depth of mica		
Wear limit	mm (in)	0.2 (0.008)
Repair accuracy	mm (in)	0.5 (0.020)
Clearance between armature shaft and bearing		
Wear limit	mm (in)	0.2 (0.008)
Repair accuracy	mm (in) .	0.03 to 0.10 (0.0012 to 0.0039)
Armature shaft diameter		
Pinion side	mm (in)	14.2 (0.559)
Rear end	mm (in)	11.0 (0.433)
Wear limit	mm (in)	0.1 (0.004)
Bend limit	mm (in)	0.08 (0.0031)
Gap "l" between and pinion front edge and pinion stopper	mm (in)	0.5 to 2.0 (0.020 to 0.079)

(2) Alternator

Rotor coil		
Resistance	Ω [at 20°C (68°F)]	3.57
Brush		
Brush length	mm (in)	18 (0.71)
Wear limit	mm (in)	.10 (0.39)
Spring pressure	kg (lb)	0.32 to 0.43 (0.71 to 0.95)
Slip ring		
Outer diameter	mm (in)	33 (1.30)
Reduction limit	mm (in)	0.5 (0.020)
Repair accuracy	mm (in)	0.05 (0.0020)

(3) Regulator

Voltage regulator		
Regulating voltage (with fully charged battery and connected faced downward)	V	1.3 8 to 15.3
Back gap	mm (in)	0.8 to 1.1 (0.31 to0.043)
Air gap	mm (in)	0 8 to 1.2 (0 031 to 0.047)
Point gap	mm (in)	0 3 to 0.4 (0.012 to 0.016)
Charge relay		
Release voltage	V at "N" terminal	3.7 to 5.7
Back gap	mm (in)	0 75 to 1.1 (0.030 to 0.043)
Air gap	mm (in)	0 9 to 1 2 (0.035 to 0.047)
Point gap	mm (in)	0 75 to 1.1 (0.030 to 0.043)

(4) Distributor

Point gap	mm (in)	0 45 to 0.55 (0.018 to 0.022)
Point pressure	kg (lb)	0 50 to 0.65 (1.10 to 1.43)
Clearance between shaft and housing	mm (in)	0.010 to 0.038 (0.0004 to 0.0015)
Amendment limit of clearance	mm (in)	0.08 (0.0031)
Clearance between shaft and cam	mm (in)	0.005 to 0.029 (0.00002 to 0.0011)
Clearance between pivot and hole	mm (in)	001 to 0.046(0.0004 to 0.0018)

(5) Spark plugs

Make		NGK	HITACHI
Model		B5ES	L46W
Size (screw dia x reach)	mm (in)	14 x 19 (0.55 x 0.75)	14 x 19 (0.55 x 0.75)
Plug gap	mm (in)	0.7 to 0.8 (0.028 to 0.031)	0.7 to 0.8 (0.028 to 0.031)
Tightening torque	kg-m (ft-lb)	1.8 to 2.4 (13 to 17)	1.8 to 2.4 (13 to 17)

4-7-2. TROUBLE DIAGNOSES AND CORRECTIONS

4-7-2-1. Starting motor

Condition	Probable cause	Corrective action
Starting motor will not operate.	Discharged battery. Faulty solenoid switch. Loose terminal connections. Worn brushes. Faulty starting motor.	Charge or replace battery. Repair or replace solenoid switch. Clean and tighten terminal. Replace brushes. Remove starting motor and test.
Noisy starting motor.	Loose securing bolt. Worn pinion gear. Poor lubrication. Worn commutator. Worn brushes.	Tighten bolt. Replace pinion gear. Add oil. Replace. Replace brushes.
Starting motor cranks slowly.	Discharged battery. Loose connection of terminal. Worn brushes. Locked brushes.	Charge or replace battery. Clean and tighten terminal. Replace brushes. Inspect brush spring tension or repair brush holder.
	Dirty worn commutator. Armature rubs field coil. Faulty solenoid switch.	Clean and repair. Replace assembly. Repair or replace switch.
Starting motor operates but does not crank engine.	Worn pinion. Locked pinion guide. Worn ring gear.	Replace pinion. Repair pinion guide. Replace ring gear.
Starting motor will not disengage even when ignition switch is turned off.	Faulty solenoid switch. Damaged gear teeth.	Repair or replace solenoid switch. Replace faulty gear.

4-7-2-2. Alternator and regulator

Condition	Probable cause	Corrective action
No output	Sticking brushes	Free, replace brush and brush spring.
	Dirty brushes and slip rings	Clean brushes and slip rings
	Loose connections or broken leads	Tighten or solder connection Replace leads
	Open stator winding.	Repair or replace stator
	Open rotor winding.	Replace rotor
	Open diodes	Replace diodes
	Shorted rotor	Replace rotor
	Shorted stator	Repair or replace stator
	Grounded "BAT" terminal	Replace insulator
	Broken fan belt.	Replace belt
Excessive output	Broken neutral point wire (color of wire is white).	Replace wire
	Faulty voltage regulator	Check regulator operation
	Poor grounding of alternator and voltage regulator "E" terminal	Tighten terminal connection
	Broken ground wire (color of wire is black).	Replace wire
Low output	Loose or worn fan belt	Tighten or replace belt
	Sticking brushes	Free; replace brushes and spring it necessary
	Low brush spring tension	Replace brush spring
	Faulty voltage regulator	Check regulator operation
	Dirty slip rings	Clean slip ring
	Partial short, ground, or open in stator winding.	Replace stator
	Partial short or ground of rotor winding	Replace rotor
	Open diode or faulty diode	Replace diode
Noisy alternator	Loose mounting	Tighten mounting bolts
	Loose drive pulley	Tighten pulley
	Faulty ball bearings	Replace bearing.
	Improperly seated brushes	Seat brushes properly.

4-7-2-3. Spark plugs

(1) When engine does not start
If there is no trouble in fuel system. ignition system should be checked. This can be easily done by detaching a high tension cable from spark plug. Turning engine over with the starter and observing condition of spark that occurs between high tension cable and spark plug terminal. After checking this .repair as necessary

Spark length	Location	Probable cause	Corrective action
No sparks at all	Distributor	Burnt insulation of condenser.	Replace.
		Breakage of lead-wire on low tension side	Repair.
		Burnt insulation of cap and rotor head.	Replace.
		Points do not open or close	Repair.
	Ignition coil	Wire breakage or short circuit of coil	Replace with a new one.
	High tension cable	Wire coming off	Repair.
		Damaged insulation.	Replace.
1 to 2 mm (0.0394 to 0.0787 in) or irregular.	Distributor	Point gap too wide.	Correct.
		Oil sticking on points.	Clean.
		Points burnt too much.	Replace.
Less than 6 mm (0.2362 in)	Spark plugs	Electrode gap too wide.	Correct or replace.
		Too much carbon.	Clean or replace.
		Broken neck of insulator.	Replace.
		Expiration of plug life.	Replace.

(2) When engine runs but does not run smoothly.
In this case, there are many causes resulting from the ignition system and other engine conditions not related to ignition. Therefore, complete inspection of ignition system should be carried out.

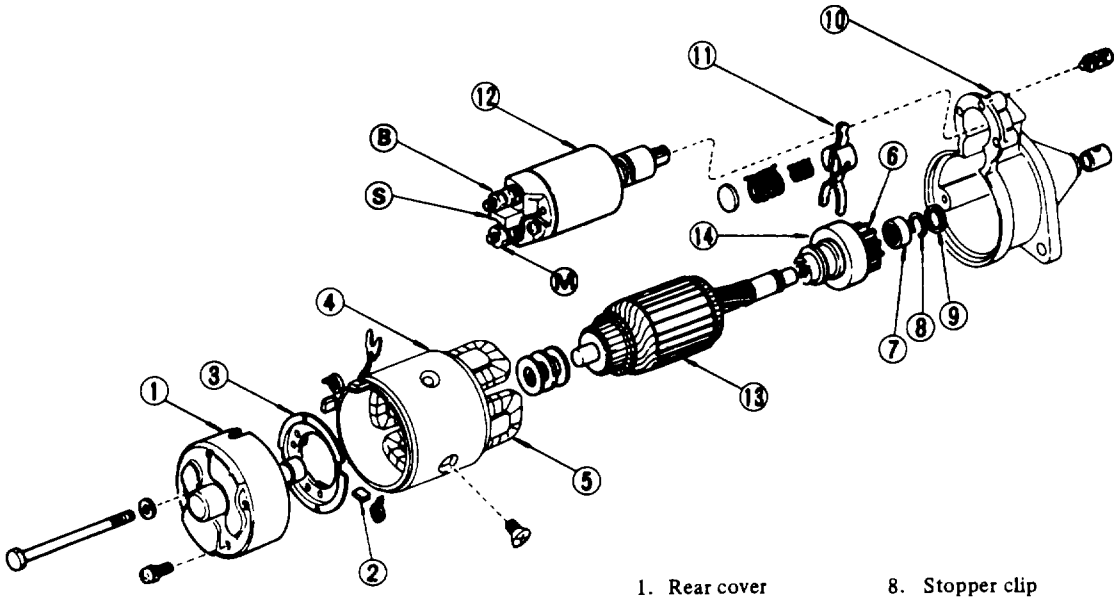
Condition	Location	Probable cause	Corrective action
Engine misses.	Distributor	Dirty point.	Clean.
		Improper point gap.	Correct.
		Leak of electricity between cap and rotor head.	Repair or replace.
		Fatigued spring of arm.	Replace assembly.
		Worn out or shaky breaker plate.	Replace assembly.
		Worn out or shaky distributor shaft.	Replace assembly.
	Ignition coil	Layer short circuit or use of inferior quality.	Replace with good one.
	High tension code	Deterioration of insulation and leak of Electricity.	Replace.
	Spark plugs	Dirty.	Clean.
		Leak of electricity at upper porcelain insulator.	Repair or replace.

Condition	Location	Probable cause	Corrective action
Engine knocks very often.	Distributor	Improper and advance timing. Coming off or breakage of governor spring. Governor portion worn out.	Correct. Correct or replace. Replace.
	Spark plugs.	Burnt too much.	Replace.
Engine does not give enough power.	Distributor	Improper and retarded timing. Faulty function of governor. Dirty points. Point gap too narrow.	Correct. Replace assembly. Clean. Correct.
	Spark plugs	Dirty.	Clean.

4-7-3-1. STARTING MOTOR

4-7-3-1. DESCRIPTION

The function of the starting system, consisting of the battery, ignition switch, starting motor and solenoid, is to crank the engine. The electrical energy is supplied from the battery, the solenoid completes the circuit to operate the starting motor, and then the motor carries out the actual cranking of the engine.



1. Rear cover
2. Brush
3. Brush holder
4. Yoke
5. Field coil
6. Pinion
7. pinion stopper
8. Stopper clip
9. Stopper washer
10. Gear case
11. Shift lever
12. Magnetic switch assembly
13. Armature
14. Over-running clutch

Fig. 4-151. Starting Motor

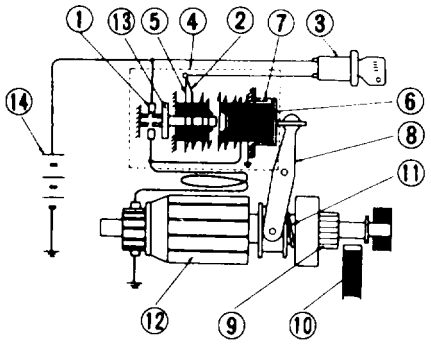
4-7-3-2. OPERATION

When the ignition switch is turned fully clockwise to the START position, battery current flows through "series" and "shunt" coils of the solenoid, magnetizing the solenoid. The plunger is pulled into the solenoid so that it operates the shift lever to move the drive pinion into the flywheel ring gear. Then the solenoid switch contacts close after the drive pinion is partially engaged with the ring gear.

Closing of the solenoid switch contacts causes the motor to crank the engine and also cut out the "series" coil of the solenoid, the magnetic pull of the "shunt" coil being sufficient to hold the pinion in mesh after the shifting has been performed.

After the engine starts running, the driver releases the ignition key and it automatically returns to the ON position.

This breaks the solenoid circuit so that reverse current flows through the series coil, and the magnetic field builds up in the direction in which the plunger moves back. As this happens, the resultant force of the magnetic fields in the shunt coil and the series coil becomes zero. The return spring then actuates the shift lever which pulls the plunger, and allows it to open the solenoid switch contacts. Consequently, the starting motor stops.



1. Stationary contact
2. Series coil
3. Ignition switch
4. Solenoid
5. Shunt coil
6. Plunger
7. Return spring
8. Shift lever
9. Drive pinion
10. Ring gear
11. Pinion sleeve spring
12. Armature
13. Movable contactor
14. Battery

Fig. 4-152. Starting Motor Circuit

More positive meshing and demeshing of the pinion and the ring gear teeth is caused by means of the over-run clutch. The over-run clutch employs a shift lever to slide the pinion along the armature shaft, into or out of mesh with the ring gear teeth. The over-run clutch is designed to transmit driving torque from the motor armature to the ring gear, but permit the pinion to over run the armature after the engine has started.

4-7-3-3. REMOVAL AND INSTALLATION

(1) Disconnect battery ground cable.
(2) Disconnect starting motor wires.
(3) Remove two starting motor retaining bolts.
(4) Remove starting motor.
(5) To install starting motor, reverse the order of removal.

4-7-3-4. DISASSEMBLY

(1) Remove nut (1) retaining terminal M to magnetic switch and remove magnetic switch attaching screws. (2) Then remove magnetic switch assembly. (3)

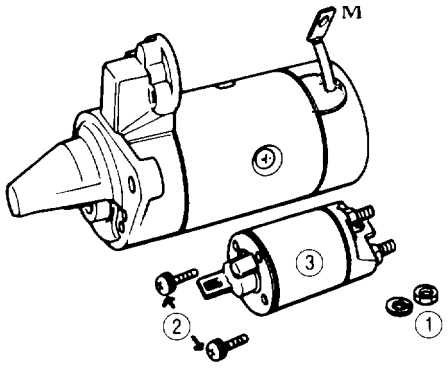


Fig. 4-153. Removing Magnetic Switch

(2) Extract two through bolts and separate yoke from armature together with front bracket.

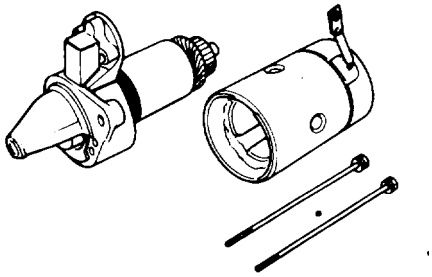


Fig. 4-154. Removing Yoke Assembly

(3) Carefully remove armature and lever from front bracket.

Note

Be sure to remember installation direction of lever.

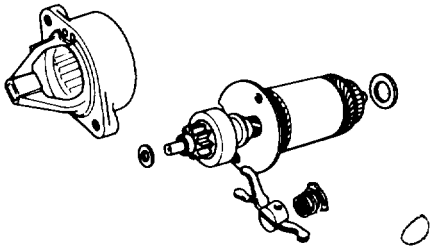


Fig. 4-155. Removing Armature Assembly and Shift Lever

(4) Remove two screws and remove rear cover.

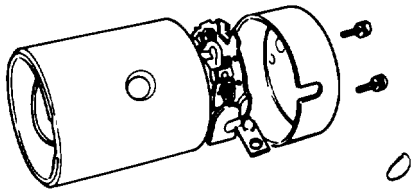


Fig. 4-156. Removing Rear Cover

(5) Extract brushes and remove brush holder assembly.

(6) Remove pinion stopper from armature shaft end To remove stopper, first, push it to clutch side. After removing stopper together with overrun clutch, withdraw overrunning clutch assembly from armature shaft.

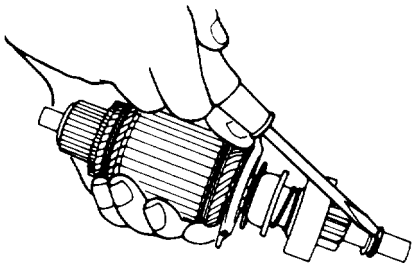


Fig. 4-157. Removing Over-Running Clutch Assembly

4-7-3-5. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent P.D.-680 is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area. Avoid contact with skin, eyes, and clothes and don't breathe vapors. Do not use near open flame or excessive heat. If you become dizzy while cleaning with solvent, get fresh air immediately and get medical aid. If contact with skin or clothing is made, flush with water. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

WARNING

Compressed air used for cleaning purposes riot exceed 30 PSI. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

Clean all disassembled parts, but do not use grease dissolving solvents for cleaning overrunning clutch, armature assembly, magnetic switch assembly and field coils since such a solvent would dissolve grease packed in the clutch mechanism and would damage coils or other insulators

Check all parts for excessive damage or wear and replace if necessary.

(1) TERMINAL

Check terminal for damage and wear and replace if necessary

(2) FIELD COIL

Check field coil for insulation. If insulation of coil is damaged or worn, it should be replaced.

(1) Testing field coil for continuity:

Connect probe of a circuit tester or an ohmmeter to field coil positive terminal and positive brush holder.

If tester shows no continuity, field circuit or coil is open.

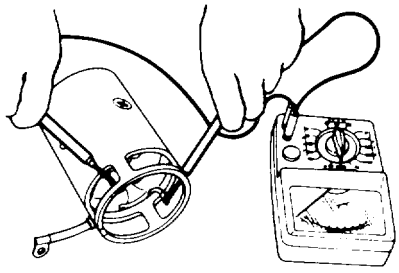


Fig. 4-158. Continuity Test of Field Coil

(2) Testing field coil for ground:

Place one probe of circuit tester onto yoke and the other onto field coil lead (positive terminal).

If very little resistance is read, field coil is grounded.

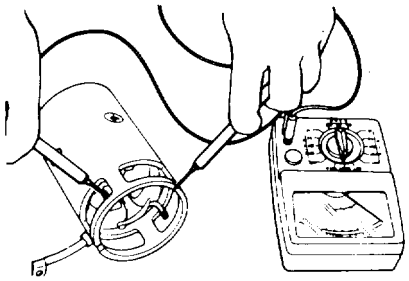


Fig. 4-159. Ground Test of Field Coil

(3) BRUSHES AND BRUSH LEAD WIRE

Check surface condition of brush contact and wear of brush. If a loose contact is found, it should be replaced.

If brush is worn and its length is less than 11.5 mm (0.453 in), replace.

Check connection of lead clip and lead wire.

Check brush holders and spring clip to see that they are not deformed or bent, and will properly hold brushes against commutator.

If brushes or brush holders are dirty, they should be cleaned.

(4) BRUSH SPRING TENSION

Check brush spring tension with a spring scale as shown in Fig. 7-11. Replace spring if tension is lower than specified value.

Brush spring tension:
More than 1.4 kg (3.1 lb)

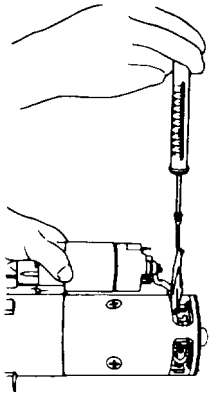


Fig. 4-160. Inspecting Brush Spring Tension

(5) ARMATURE ASSEMBLY

Check external appearance of armature and commutator.

(1) Measure the armature shaft for any bends with a dial gauge. Replace armature shaft if bend exceeds specified value.

Armature shaft bend:
Less than 0.08 mm (0.0031 in)

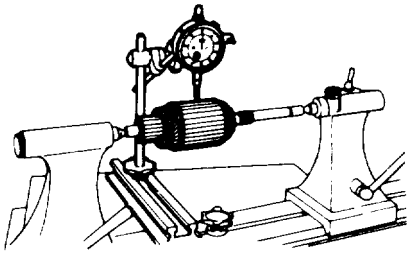


Fig. 4-161. Inspecting Armature Shaft for Bend

(2) Inspect commutator. If surface of commutator is rough, it must be sanded lightly with a No. 500 emery cloth. Commutator must be checked also for out-of-roundness. If out-of-roundness is more than 0.2 mm (0.008 in), or depth of insulating mica is less than 0.2 mm

(0.008 in) from commutator surface, commutator (armature) should be turned on a lathe, so that the out-of-roundness is less than 0 05 mm (0.0020 in) insulating mica should also be undercut so that the depth of it is 0.5 to 0.8 mm (0.020 to 0 31 in).

Wear limit of the commutator diameter is, 2 mm (0.08 in). It the commutator is beyond repair, replace.

Note

It is recommended to replace commutator as an assembly if worn or damaged.

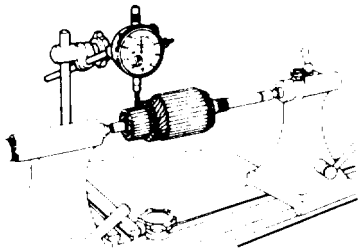


Fig. 4-162. Inspecting Commutator for Out-of-Roundness

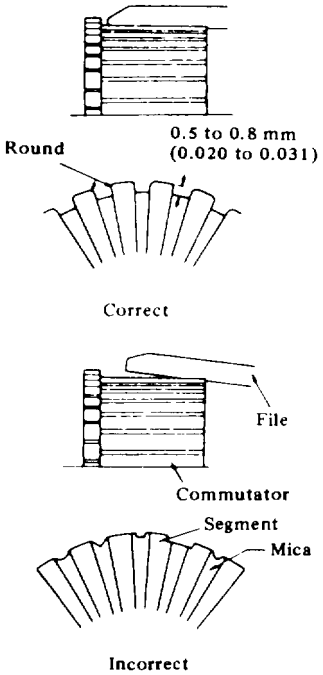


Fig. 4-163. Undercutting Insulating Mica

(3) Inspect soldered connection of armature lead and commutator. If loose connection is found, solder it using rosing flux.

(4)Armature test for ground

Using a circuit tester, place one test probe onto armature shaft and other onto each commutator bar.

If the tester shows continuity, the armature is grounded and must be replaced

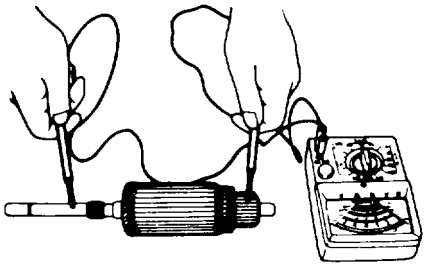


Fig. 4-164. Armature Test for Ground

(5) Check armature for short by placing it on the armature tester (growler) with a piece of iron over armature core, rotating armature. If the plate vibrates, armature is shorted

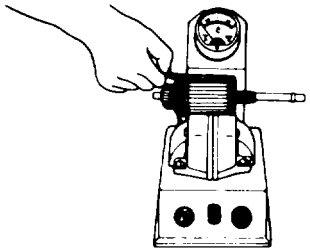


Fig. 4-165. Armature Test for Short-Circuit

(6) Check armature for continuity by placing probes of tester on two segments side by side. It tester shows no continuity, circuit is open

(6) OVER-RUNNING CLUTCH ASSEMBLY

Inspect pinion assembly and screw sleeve. Screw sleeve must slide freely along armature shaft splines. If damage is found or resistance is felt when sliding, it must be repaired. Inspect pinion teeth. If excessive rubbing is found on teeth, it should be replaced. Flywheel ring gear also must be inspected.

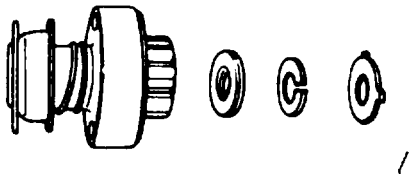


Fig. 4-166. Over-Run Clutch Assembly

(7) BRUSH HOLDER TEST FOR GROUND

Using a circuit tester, place one test probe onto negative side brush holder and another onto positive side. If tester shows continuity, brush holder is shorted to ground. Replace an insulator or brush holder.

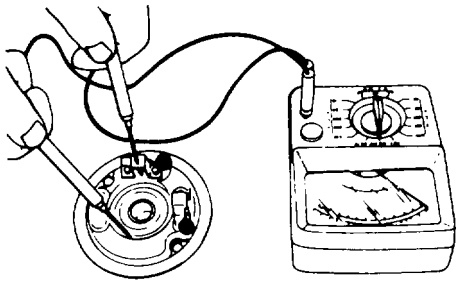


Fig. 4-167. Testing Brush for Ground

(8) PINION CASE BEARING METAL

Inspect bearing metal for wear or side play. If clearance between bearing metal and armature shaft is more than 0.2 mm (0.008 in), replace metal. Press in a new bearing and adjust clearance to 0.03 to 0.10 mm (0.0012 to 0.0039 in). Bearing metal should be pressed in so that end of bearing metal is flush with gear case.

(9) MAGNETIC SWITCH ASSEMBLY

(1) Using a circuit tester, check continuity between "S" terminal of magnetic switch and switch body metal.

It continuity does not exist, shunt coil is opened. Replace switch assembly.

(2) In the same manner as above, check continuity between terminals "S" and "M". If continuity does not exist, series coil is opened. Replace switch assembly.

4-7-3-6. ASSEMBLY

Reassembly starting motor in the reverse sequence of disassembly.

When assembly, be sure to apply grease to the gear case and rear cover bearing metal, and apply oil to pinion slightly.

4-7-3-7. TEST

(1) PERFORMANCE TEST

Starting motor should be subjected to a "no-load" test whenever it has been overhauled to ensure that its performance will be satisfactory

when installed on engine. The starting motor should also be subjected to a test when the cause of abnormal operation is to be determined. A brief outline of test is given below.

No-load test

Connect the starting motor in series with a specified (12 volts) battery and an ammeter capable of indicating 1.000 amperes.

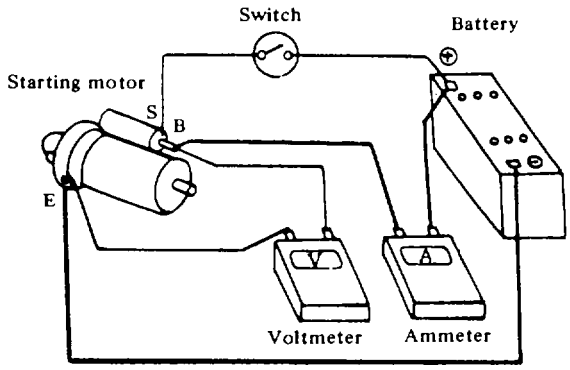


Fig. 4-168. No-Load Test

(2) DIAGNOSES OF TEST

(1) Low speed with no-load and high current draw may result from the following causes.
a. Tight. dirty or worn bearings.
b. Bent armature shaft or loose field probe.
c. Shorted armature.
Check armature further.
d. A grounded armature or field:
(a.) Remove input terminal.
(b.) Raise two negative side brushes from commutator.
(c.) Using a circuit tester. place one probe onto yoke.
(d.) If tester indicates continuity. raise the other two brushes and check the field and armature separately to determine whether the field or armature is grounded.

(2) Failure to operate with high current draw may result from the following items.
a. A grounded or open field coil:
Inspect connection and trace circuit with a circuit tester.
b. Armature coil does not operate:
Inspect commutator for excessive burning. In this case. an arc may occur on malfunctioning commutator when motor is operated with no-load.
c. Burned out commutator bar:
Weak brush spring tension, broken brush spring, rubber bush, thrust out of mica in commutator or a loose contact between brush and commutator would cause burned-out commutator bar.
(3) Low current draw and low no-load speed ⊕ would cause high internal resistance due to loose connections, faulty leads, dirty commutator and causes listed in item 2-C.

(3) MAGNETIC SWITCH ASSEMBLY TEST

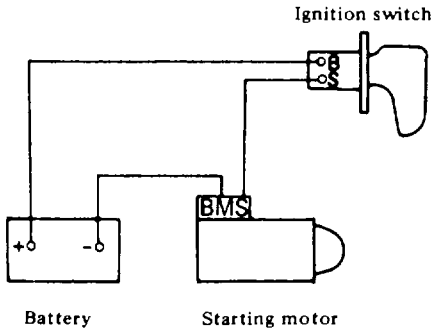


Fig. 4-169. Magnetic Switch Assembly Test

If starting motor check is "OK," check magnetic switch assembly. Connect cables between "negative" battery terminal and starting motor "M" terminal, "positive" battery terminal and starting motor "S" terminal connecting ignition switch in series as shown in Fig. 7-20.

With ignition switch on, measure the gap "Q" between pinion front edge and pinion stopper.

The clearance should be held within 0.5 to 2.0 mm (0.020 to 0.079 in). If necessary, adjust it by changing or adding adjusting washer(s). Adjusting washers are available in two different sizes, 0.5 mm (0.020 in) and 0.8 mm (0.031 in).

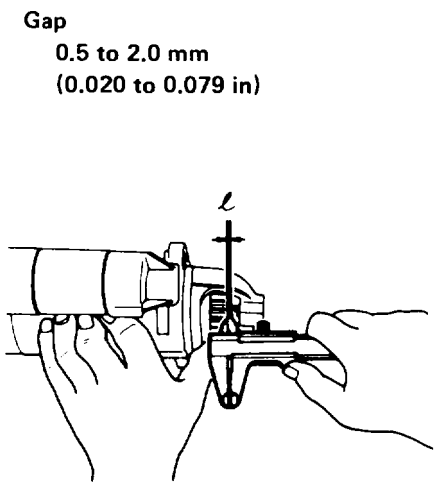


Fig. 4-170. Measuring Gap "ℓ""

4-7-4. CHARGING CIRCUIT

The charging circuit consists of the battery, alternator, regulator and necessary wiring to connect these parts. The purpose of this system Is to convert mechanical energy from the engine into electrical energy which is used to operate all electrically operated units and to keep the battery fully charged.

When the ignition switch is set to "ON", current flows from the battery to ground through the ignition switch, voltage regulator IG terminal, primary side contact point "P1," movable contact point "P2", voltage regulator "F" terminal, alternator "F" terminal. field coil and alternator "E" terminal. as shown in Fig. 7-22 by full line arrow marks. Then the rotor in the alternator is excited. On the other hand, current flows from the battery to ground through the ignition switch, warning lamp, voltage regulator "L" terminal, lamp side contact point "P4," movable contact point "PS," and voltage regulator "E" terminal, as shown by dotted line arrow marks. Then. the warning lamp comes on.

When the alternator begins to operate, three phase alternating current is induced in the stator cold. This alternating current is rectified by the positive and negative silicon diodes. The rectified direct current output reaches the "A" and "E" terminals of the alternator.

On the other hand, the neutral point voltage reaches "N" and "E" terminals (nearly a half of the output voltage), and current flows from the voltage regulator 'N" terminal to "E" terminal or ground through the coil "VC1" as shown in Fig. 7-23 by the dotted line arrow marks. Then, the movable contact point "P5" comes into contact with the voltage sinding side contact point “P6". This action causes the warning lamp to turn off and complete the voltage winding circuit, as shown by the full line arrow marks.

When the alternator speed is increased or the voltage starts to rise excessively, the movable contact point "P2" is separated from the primary side contact "P1" by the magnetic force of the coil "VC2." Therefore, the resistor "R1" is applied into the rotor circuit and output voltage is decreased As the output voltage is decreased. the moveable contact point "P2" and primary side contact "P1" comes into contact once again, and the alternator voltage increases. Thus, the rapid vibration of the movable contact point "P2", maintains an alternator constant output voltage.

When the alternator speed is further increased or the voltage starts to rise excessively, the movable contact point "P2" comes into contact with secondary side contact point "P3". Then, the rotor current is shut off and alternator output voltage is decreased immediately. This action causes to separate movable contact "P2" from secondary contact "P3". Thus, the rapid vibration of the movable contact point "P2" or breaking and completing the rotor circuit maintains an alternator constant output voltage.

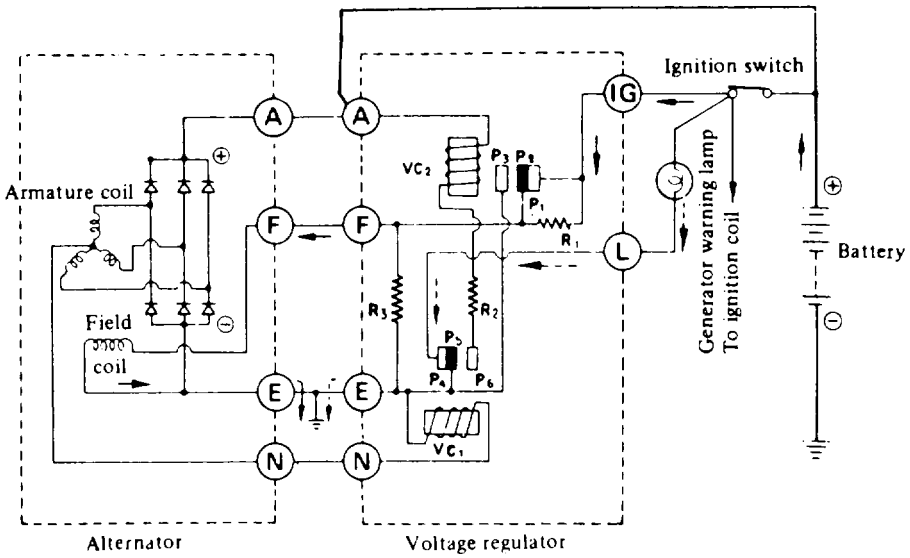


Fig. 4-171. Charging Circuit (I)

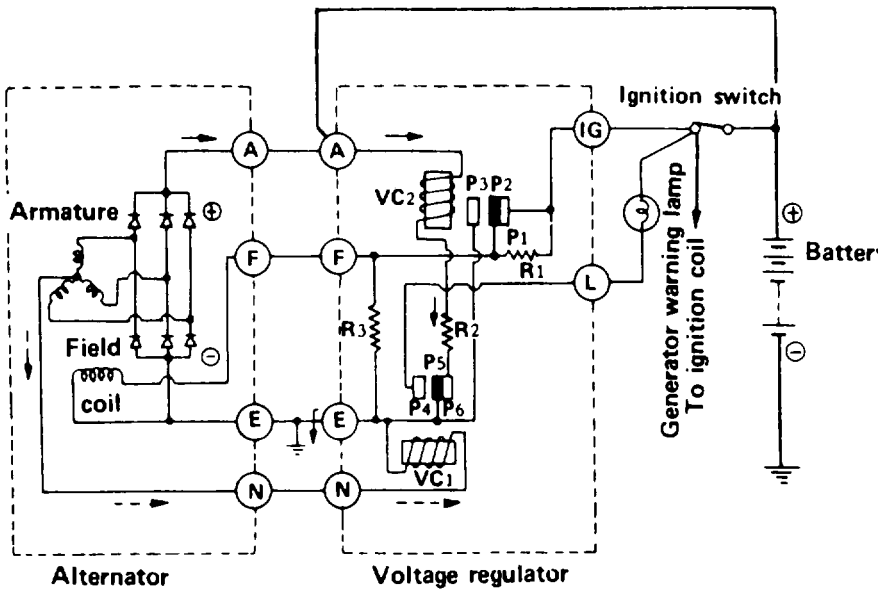


Fig. 4-172. Charging Circuit (II)

4-7-5. ALTERNATOR

4-7-5-1. DESCRIPTION

In the alternator, a magnetic field is produced by the rotor which consists of alternator shaft, field coil, pole pieces. and slip rings. The slip rings pressed on the shaft conducts only a small field current. Output current is generated in the armature coils located in the stator. The stator has three windings and generates three-phase alternating current. Silicon diodes act like a oneway valve for electricity so that charging current passes easily. but reverse current is shut out. In this alternator, six diodes (three negative and three positive), are installed in positive and negative plates as an assembly.

Pack-type silicon diodes are used in this alternator. These diodes are soldered directly at their tips, and constructed with positive and negative conjunction. They are mounted on the two plates which combine the function of heat-dissipating and positive/negative terminals. They are light in weight and easy to service.

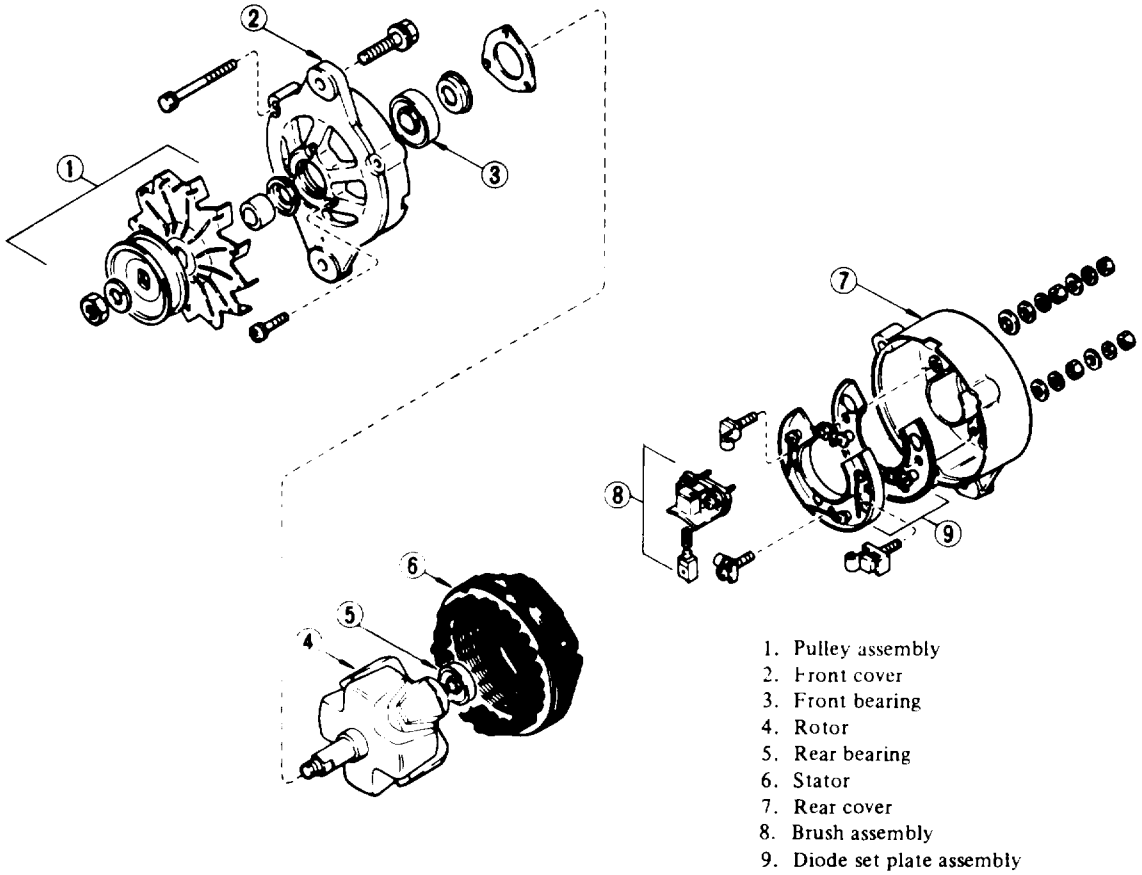
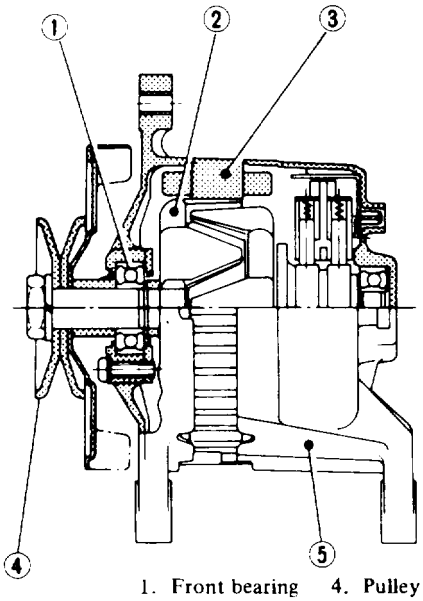


Fig. 4-173. Alternator



1. Front bearing
2. Rotor
3. Stator
4. Pulley
5. Rear cover

Fig. 4-174. Sectional View of Alternator

4-7-5-2. REMOVAL AND INSTALLATION

(1) Disconnect negative battery terminal.
(2) Disconnect two lead wires and connector from alternator.
(3) Loosen adjusting bolt.
(4) Remove alternator drive belt.
(5) Remove parts associated with alternator from engine.
(6) Remove alternator from lift truck.

4-7-5-3. DISASSEMBLY

(1) Remove pulley nut, pulley rim, fan and spacer.

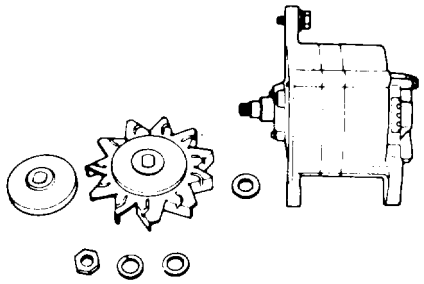
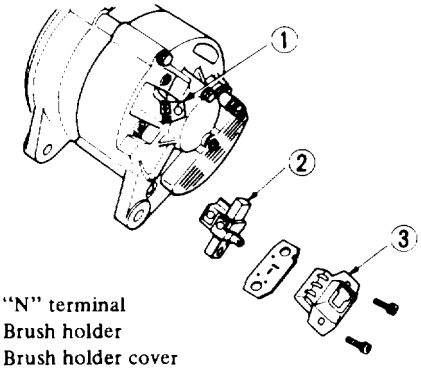


Fig. 4-175. Removing Pulley and Fan

(2 Remove brush holder mounting screws. And remove brush holder cover. Move brush holder forward. and remove brushes together with brush holder.

Note: Do not disconnect "N" terminal from stator coil lead wire.



1. "N" terminal
2. Brush holder
3. Brush holder cover

Fig. 4-176. Removing Brush

(3) Loosen and remove through bolts. Separate front cover with rotor from rear cover with stator by lightly tapping front bracket with a wooden mallet.

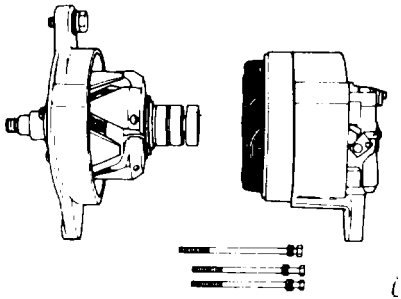


Fig. 4 -177. Separating Front Cover with Rotor from Rear Cover

(4) Remove three set screws from bearing retainer, and separate rotor from front cover.

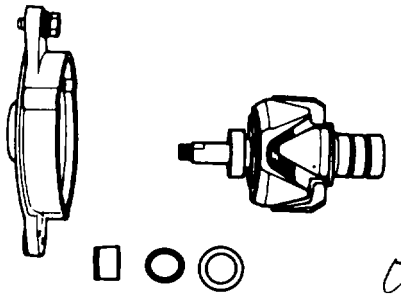


Fig. 4-178. Removing Rotor

(5) Pull out rear bearing from rotor assembly with a press or bearing puller.

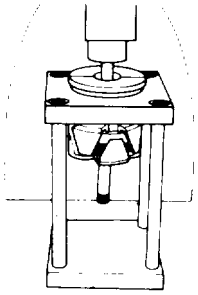


Fig. 4-179. Pulling Out of Rear Bearing (I)

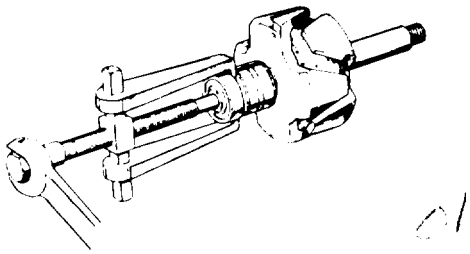
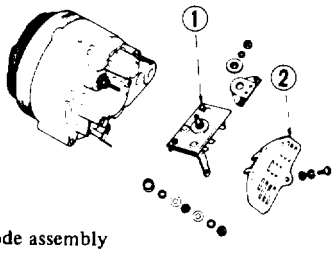


Fig. 4-180. Pulling Out of Rear Bearing (II)

(6) Remove diode cover fixing screw, and remove diode cover. Disconnect three stator coil lead wires from diode terminal with a soldering iron.

('7) Remove "A" terminal nut and diode installation nut, and remove diode assembly.



1. Diode assembly
2. Diode cover

Fig. 4-181. Removing Diode Assembly

Note: Use care in handling diode assembly to prevent undue stress on it

4-7-5-4. INSPECTION AND REPAIR

Remove alternator from lift truck and apply tester between lead wire F (white with black tracer) and lead wire E (black color).

When the resistance is approximately 552, the condition of brush and field coil is satisfactory. When no continuity exists in brush or field coil or when resistance differs remarkably between those parts, disassemble and inspect.

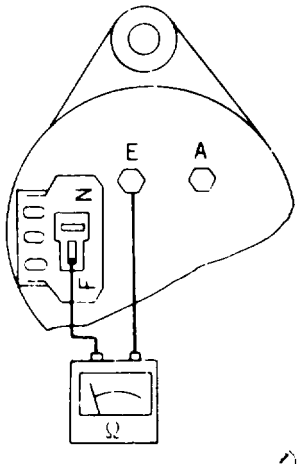


Fig. 4-182. Inspecting Alternator

(1) ROTOR INSPECTION

(1) Continuity testing of rotor coil

Apply tester between slip rings of rotor as shown in Fig. 7-34. If there is no continuity, an "open" in the field coil may exist Replace rotor assembly.

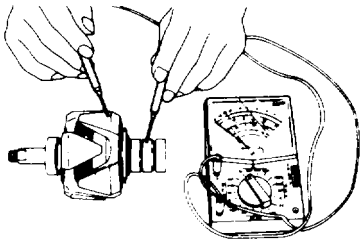


Fig. 4-183. Conduction Test of Rotor Coil

(2) Ground test of rotor coil

Check continuity between slip ring and rotor core. If continuity exists. replace rotor assembly. because field coil or slip ring may be grounded.

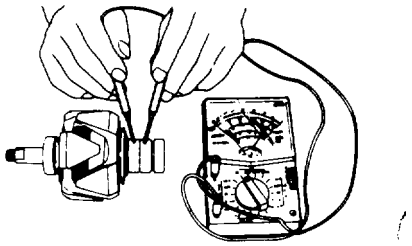


Fig. 4-184. Testing Rotor Coil For Ground

(2) INSPECTION OF STATOR

(1) Continuity Testing

Stator is normal when there is continuity between individual stator coil terminals. When there is no continuity between individual terminals. cable is broken. Replace stator assembly.

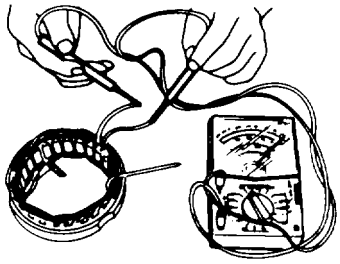


Fig. 4-185. Testing Stator for Conduction

(2) Ground test

It each lead wire of armature coil (including neutral wire) is non-conductive with stator core. condition is satisfactory. If there is continuity stator coil Is grounded.

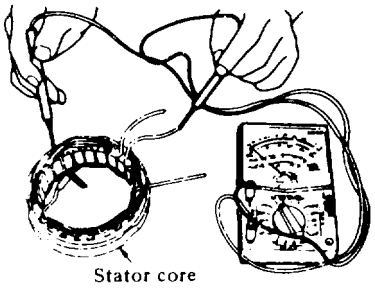


Fig. 4-186. Testing Stator for Ground

(3) INSPECTION OF DIODE

Perform a continuity test on diodes in both directions, using an ohmmeter. A total of six diodes are used; three are mounted on the positive (+) plate, and on other three are on the negative (-) plate. The continuity test should be performed on each diode, between the terminal and plate.

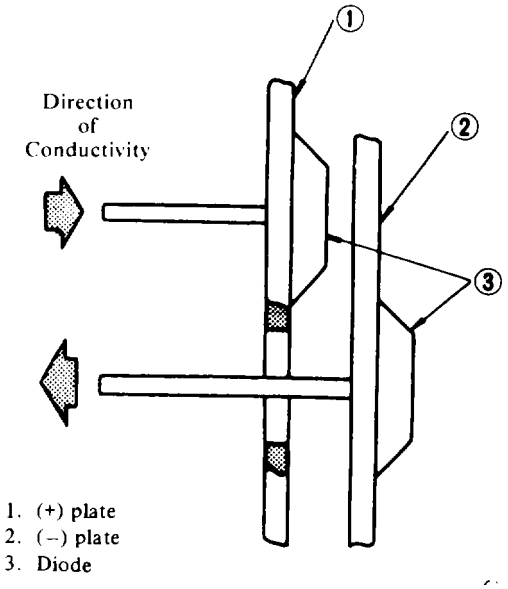


Fig. 4-187. Conductive Direction of Diode

The diode installed on (+) plate is a positive diode which allows current flowing from the terminal to (+) plate only. In other words, current does not flow from (+) plate to terminal.

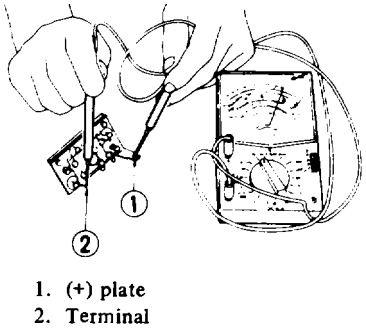


Fig. 4-188. Inspecting Negative Diode

The diode installed on (-) plate is a negative diodes which allow current flowing from (-) plate to terminal only. In other words, current does not flow from terminal to (-) plate.

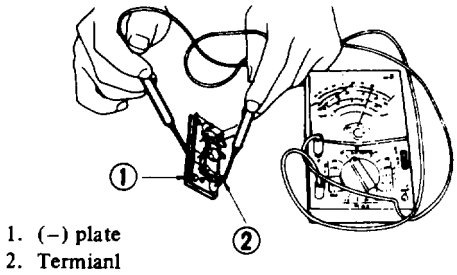


Fig. 4-189. Inspecting Negative Diode

If current flows toward both positive and negative directions, the diode is short-circuited. If current flows in the one direction only, the diode is in good condition. If there is a faulty diode, replace all diodes (six diodes) as an assembly. (See below table.) These diodes are unserviceable.

Test probe of a circuit tester		
(-)	(+)	Conduction
terminal	(+) plate	0
(+) plate	terminal	-
terminal	(-) plate	-
(-) plate	terminal	0
(-) plate	(+) plate	0
(+) plate	(-) plate	-

Fig. 4-190. Inspecting Diodes

(4) INSPECTION OF BRUSH

Check the movement of the brush and if movement is unsmooth. check brush holder and clean it.

Check the brush for wear. If It is worn down to less than the specified limit. replace brush assembly.

Check brush pig tail and, if found defective, replace.

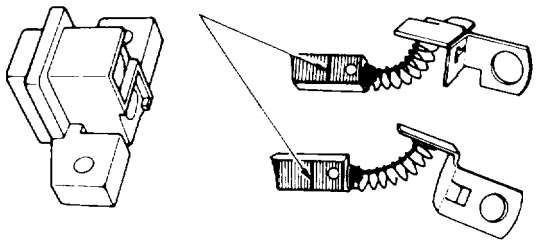


Fig. 4-191. Brush Wear Limit

(5) SPRING PRESSURE TEST

With brush projected approximately 2 mm (0.08 in) from brush holder, measure brush spring pressure by the use of a spring balance. Normally, the rated pressure of a new brush spring Is as follows.

Spring pressure:
0.33 to 0.44 kg
(0.73 to 0.97 lb)

Moreover, when brush is worn, pressure decreases approximately 20 g (0.7 oz) per 1 mm (0.04 in) wear.

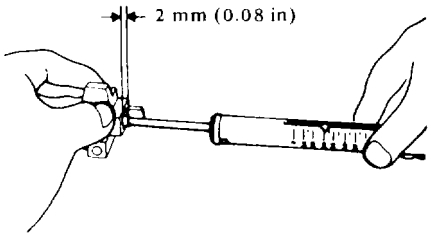


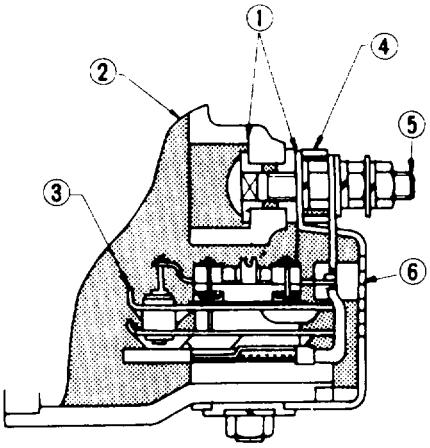
Fig. 4-192. Measuring Spring Pressure

4-7-5-5. ASSEMBLY

Reassemble alternator in the reverse sequence of disassembly noting following points.

(1) When soldering each stator coil lead .ire to diode assembly terminal, carry out the operation as fast as possible.

(2) When installing diode in the "A" terminal. install insulating bushing and insulating tube correctly.



1. Insulating bushing
2. Rear cover
3. Diode assembly
4. Stator coil lead wire
5. A terminal bolt
6. Diode cover

Fig. 4-193. Diode and A Terminal

(3) Tighten pulley nut to 350 to 400 kg-cm (301 to 344 in-lb). When pulley is tightened, make sure that deflection of V-groove is within specified value.

V-groove deflection:
Less than 0.3 mm (0.012 in)

Fig. 4-194. Tightening Pulley Nut

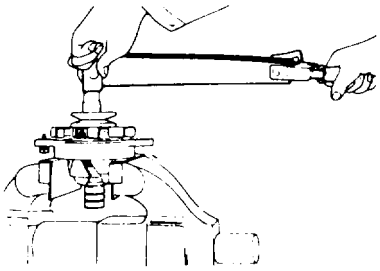


Fig. 4-194. Testing Alternator

4-7-5-6. TEST

Before conducting an alternator test, make sure that the battery is fully charged.

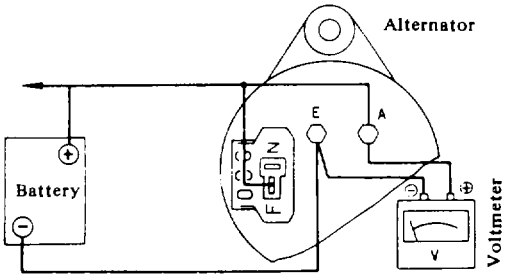
To conduct a test, it is necessary to use a 30-volt voltmeter and suitable test probes.

Set up a test circuit as shown In Fig. 7-46 and test alternator in the manner indicated in the flow chart below:

1. Disconnent connectors at alternator.
2. Connect one test probe from voltmeter positive terminal to "N" terminal or "BAT" terminal. Connect the other test probe to ground. Make sure that voltmeter registers battery voltage.
3. Turn on headlights and switch to Main Beam.
4. Start engine.
5. Increase engine speed gradually until it is approximately 1,100 rpm, and take the voltmeter reading.

Measured value: Below 12.5 volts
Alternator is out of order. Remove and check it for condition.

Measured value: Over 12.5 volts
Alternator is in good condition.



Note:

a. Do not urn engine at more that 1,100 rpm while test is being conducted on alternator.
b. Do not race engine.

Fig. 4-195. Testing Alternator

4-7-6. REGULATOR

4-7-6-1. DESCRIPTION

The voltage regulator is temperature compensated so that the charging voltage copes with the climatic changes and two units are housed in the regulator box: a voltage regulator relay and a pilot lamp relay. The effect of temperature fluctuation on their relay setting is minimized by the use of a bi-metal spring.

4-7-6-2. REMOVAL

To remove the voltage regulator, disconnect the multiple connector and remove the regulator.

4-7-6-3. INSTALLATION

Installation is a reversal of removal procedure.

4-7-6-4. MEASUREMENT OF REGULATOR VOLTAGE

(1) Connect a voltmeter and an ammeter with a fully charged battery and resistor as shown in Fig. 7-47. Install a regulator perpendicularly with connector facing downward.

Note: Make sure that all electrical loads (such as head lamps) on lift truck have been switched off.

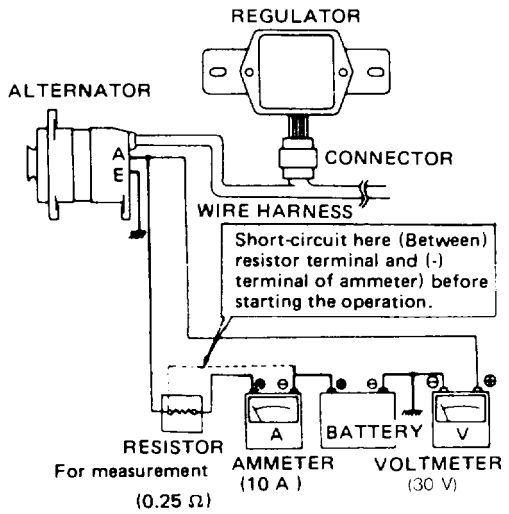
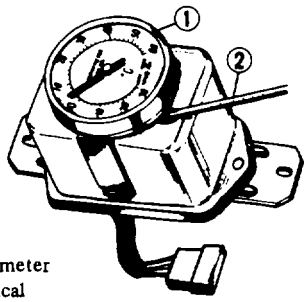


Fig. 4-196. Regulating Voltage Measuring Circuit with Regulator and Alternator Mounted on Lift Truck

(2) In an over temperature compensated regulator. it is necessary to measure temperature of the regulator cover as the regulating voltage is varied according to the surrounding temperature. In this case. use a thermometer or cylindrical thermometer with putty as shown in Fig. 7-48.

(3) Before starting the operation, be sure to short-circuit the line between the terminal of resistor for voltage measurement and (-) terminal of the ammeter. Pointer of ammeter may deflect rapidly and reversely due to discharge current flowing from the battery. resulting in a damaged ammeter.



1. Thermometer
2. Cylindrical thermometer

Fig. 4-197. Measuring Regulator Cover Temperature

(4) Increase engine speed to 2,500 rpm gradually, and continue operation for several minutes. Make sure that the amperage is less than 5A after several minutes have elapsed. Lower engine speed to idling speed.

Note: If several minutes have elapsed and amperage did not lower below 5A, battery is not fully charged. Replace battery with a fully charged one.

(5) Increase engine speed to 2,500 rpm gradually, and read voltage indicated on voltmeter. Compare regulating voltage against rated regulating voltage at ambient temperature of regulator at the time of measurement.

Note: When two to three minutes are elapsed after starting regulator operation, voltage rises approximately 0.3 V from normal voltage due to self-heating. Thus, be sure to measure voltage within one minute after starting operation. When measurement cannot be made within one minute, cease operation at once and measure again after cooling regulator. Do not measure output voltage immediately after driving. When measuring, make sure that regulator is cold.

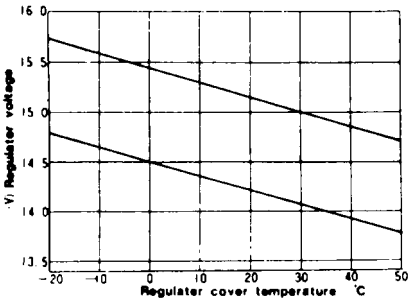
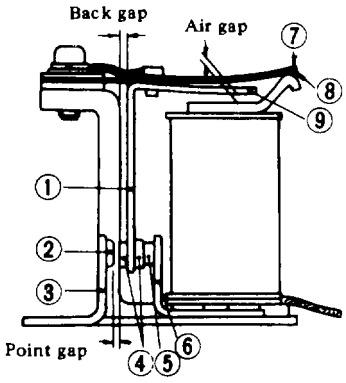


Fig. 4-198.

4-7-6-5. ADJUSTMENT

(1) VOLTAGE REGULATOR

As a result of the above measurement. When regulating voltage is not the rated value. Adjust regulator in accordance with following instructions.



1. Movable contact support
2. Secondary side contact
3. Secondary side contact
4. Movable contact
5. Primary side contact
5. Primary side contact
6. Primary side contact support
7. Spring
8. Bi-metal
9. Armature

Fig. 4-199. Construction of Voltage Regulator

Unit: mm (in)

Back gap	0.8 to 1.1 (0.031 to 0.043)
Air gap	0.8 to 1.2 (0.031 to 0.047)
Point gap	0.3 to 0.4 (0.012 to 0.016)

(1) Adjusting back gap

Loose armature hinge screw and adjust position by sliding armature.

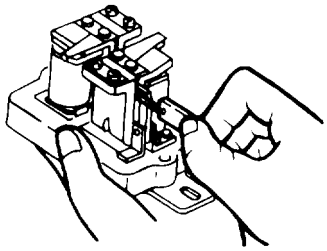


Fig. 4-200. Check Back Gap

(2) Adjusting the top air gap

Adjust the gap by bending movable contact ,supports,

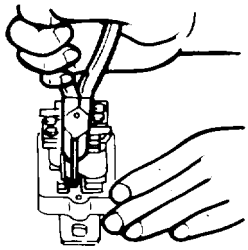


Fig. 4-201. Adjusting Air Gap

(3) Adjusting the point gap

Adjust the gap b, bending secondary contact support,

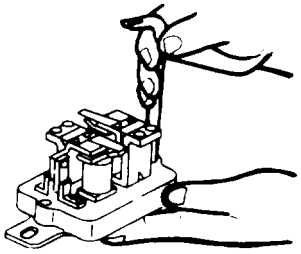


Fig. 4-202. Adjusting Point Gap

(4) Adjusting the voltage

Adjust the voltage be bending stopper up or down. Bend upward to raise adjusting valve and down ward to lower adjusting salve.

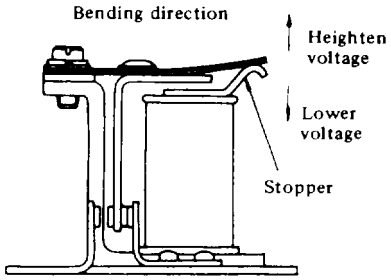


Fig. 4-203. Adjusting Voltage

(2) CHARGE RELAY

Unit. mm (n)

Model RLB2220B1	
Back gap	0.75 to 1.1 (0.030 to 0.043)
Air gap	0.9 to 1.2 (0.035 to 0.047)
Point gap	0.75 to 1.1 (0.030 to 0.043)

The normal charge of a relay operating Is 3.7 to 5.7V at the generator "N" terminal.

It is difficult to measure this operating voltage with the regulator mounted on the lift truck.

Prepare a battery, voltmeter and variable resistor, and measure operating voltage after dismounting the regulator.

Set the variable resistor to the "MAX" position. Apply current (turn on these witch), and reduce resistance gradually. When resistance is reduced to a certain level. the charge lamp goes off.

This level indicates the charge relay operating voltage. The rated value is 3.7 to 5.7V volts. When not correct. readjust. The adjustment is carried out in the same manner as the voltage regulator

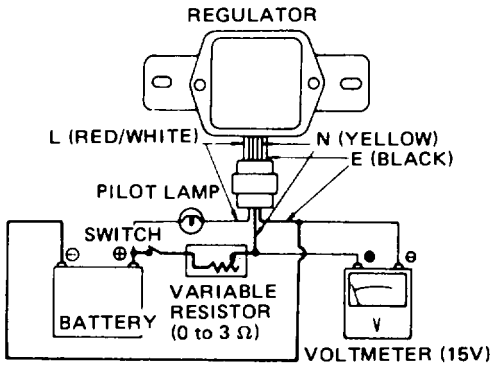


Fig. 4-204. Charge Relay Operating Voltage Measuring Circuit

(3) PRECAUTIONS FOR ADJUSTMENT

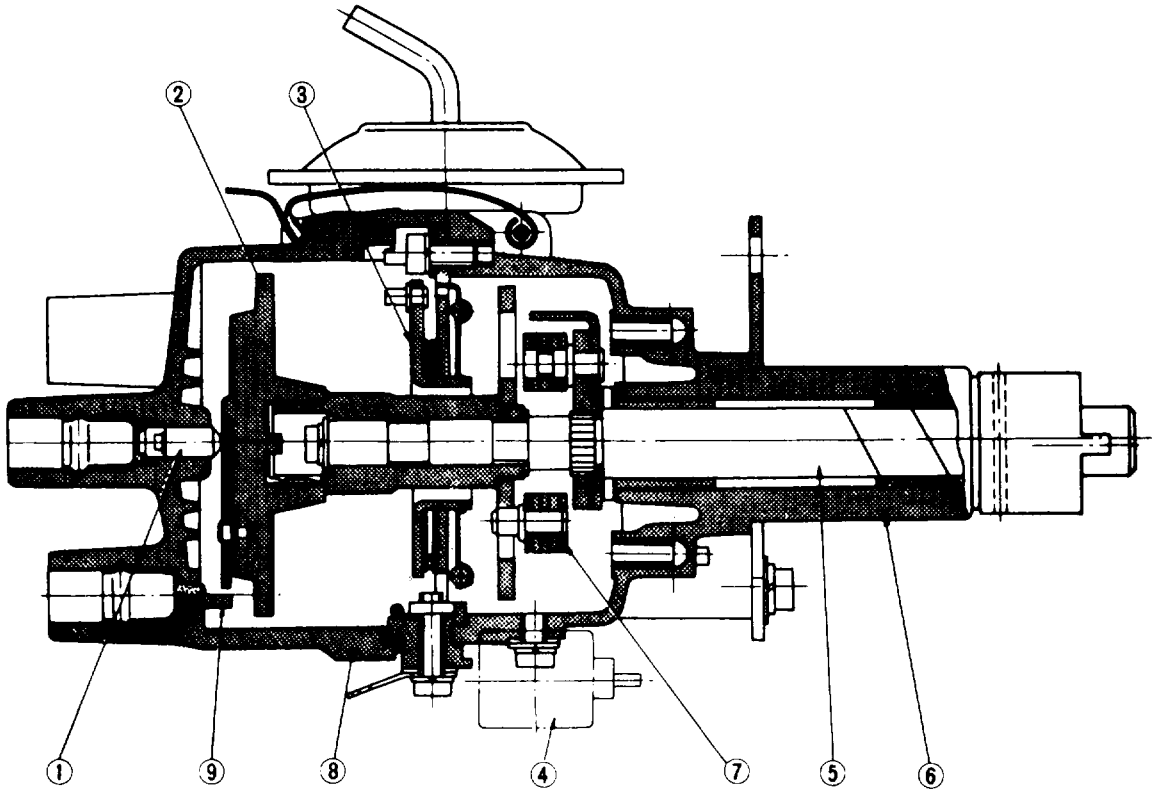
(1) Upon completion of adjustment, reinstall cover and make sure that regulator operates correctly.

(2) When cover is removed or adjusting screw is adjusted while adjusting voltage. be sure to disconnect the regulator at once, and reconnect when actually measuring or battery circuit may be short-circuited.

4-7-7. DISTRIBUTOR

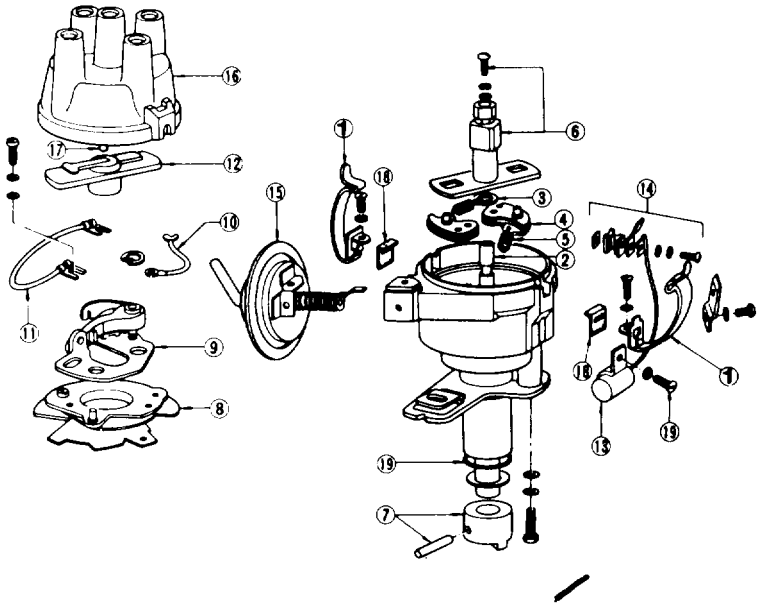
4-7-7-1. DESCRIPTION

The distributor consists of a breaker plate with contact points, a centrifugal advance mechanism, a vacuum unit. a drive shaft. and a rotor. Fig. 4-205 shows a sectional view of the unit.



1. Center carbon
2. Rotor head
3. Breaker plate and contact
4. Condenser
5. Shaft
6. Housing
7. Governor weight
8. Cap
9. Side plug

Fig. 4-205. Construction



1. Clamp
2. Shaft assembly
3. Thrust washer
4. Governor weight
5. Governor spring
6. Cam assembly
7. Collar set
8. Breaker plate assembly
9. Contact set
10. Earth wire assembly
11. Lead wire assembly
12. Rotor head assembly
13. Condenser assembly
14. Terminal assembly
15. Vacuum control assembly
16. Cap assembly
17. Carbon point assembly
18. Dust seal
19. O-ring

Fig. 4-206. Components of Distributor

4-7-7-2. CHECK AND ADJUSTMENT

(1) CAP AND ROTOR HEAD

The cap and rotor head must be inspected at regular intervals. If the cap is cracked or is leaking current, replace with a new one.

(2) POINTS

Standard point gap isO.45 to 0.55 mm(O.018 to 0.022 in). Adjustment should be made by loosening point screws. Gap gauge is required for adjustment.

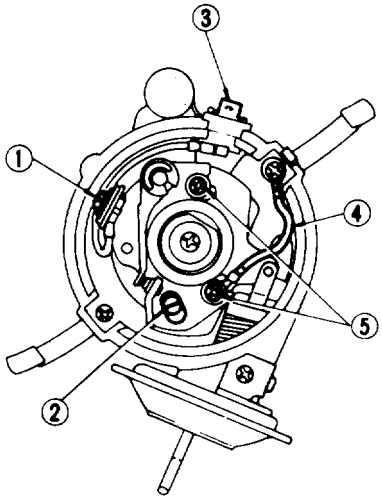
Point gap must be checked according to maintenance schedule.

When point surface is rough, take off any irregularities with fine sandpaper (No. 500 or 600) or with a point file.

At this time, grease must be applied to camshaft head and cam heel.

When wear on breaker points is noticeable, replace the point set.

To replace, proceed as follows:



1. Screw
2. Adjuster
3. Primary lead terminal
4. Ground lead wire
5. Point set screw

Fig. 4-207. Breaker

First turn out set screws I to 1.5 turns at contact arm and primary lead wire connection just far enough to pull out primary lead terminal.

Referring to Fig. 7-58 unscrew two contact set screws and remove lead wire.

While holding contact arm with fingers, pull out contact set toward you by raising it slightly. Contact point and arm can then be removed together.

Install new contact point and arm assembly In reverse sequence of removal. Coat cam heel and cam shaft head with a light coating of grease.

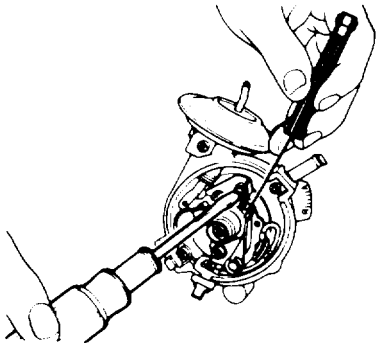


Fig. 4-208. Measuring Point Gap

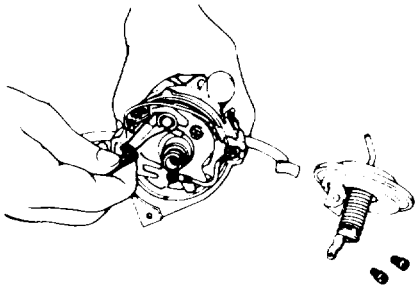


Fig. 4-209. Disassembling Contact Arm and Contact Point

(3) CONDENSER

Satisfactory performance of 'condenser depends on capacity and degree of insulation. requiring attention to be sure that terminals are clean and set screws are tight.

Checking of condenser is made by a capacity tester. This can also be made by a circuit tester with its range set to high resistance reading. When needle of tester swings *violently and then moves back to "infinite" gradually. It Is an indication that the condenser is in good condition.

If needle shows any steady reading or if it registers zero. the likelihood is that the condenser is out of order. calling for replacement.

(4) ADVANCE MECHANISM

				D413-99
Advance performance characteristics	Centrifugal	Start	rpm	625
		Intermediate	degree/rpm	-
		Maximum	degree/rpm	15/1,550
	Vacumm	Start	mmHg (inHg)	150 (5.91)
		Intermediate	degree/-mmHg (-inHg)	8.5/300 (I 1.81)
		Maximum	degree/-mmHg (-inHg)	11.25/390 (15.35)

Vacuum advance mechanism mechanical parts

If vacuum advance mechanism fails to operate properly, check for the following Items and correct the trouble as required.

(1) Check vacuum inlet for signs of leakage at its connection. If necessary, retighten or replace with a new one.

(2) Check vacuum diaphragm for air leak.
If leak is found, replace diaphragm with a new one.

(3) Inspect breaker plate for smooth movement.
If plate does not move smoothly, this condition could be due to sticky steel balls or pivot. Apply grease to steel balls or, if necessary, replace breaker plate as an assembly.

Centrifugal advance mechanical parts

When cause of engine trouble is traced to centrigual advance mechanical part. use distributor tester to check its characteristics.

When nothing is wrong with its characteristics, conceivable causes are faultiness or abnormal wear of driving part or other part.

Do not disassemble it. In case of improper characteristics, remove on-off switch part and check cam assembly closely. governor weights. shaft and governor springs, etc.

When centrifugal advance mechanical parts are good, be sure to check advance characteristics with a distributor tester.

4-7-7-3. DISASSEMBLY AND ASSEMBLY

(1) DISASSEMBLY

To disassemble, follow the procedure below.

(1) Take off cap and disconnect rotor head.

(2) Remove vacuum controller.

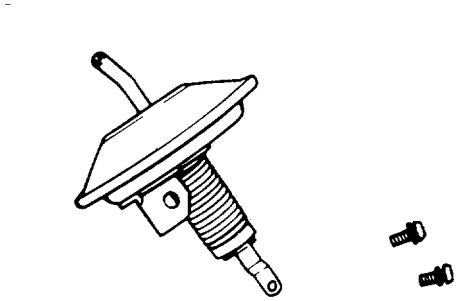


Fig. 4-210. Disassembling Vacuum Controller

(3) Remove contact breaker.

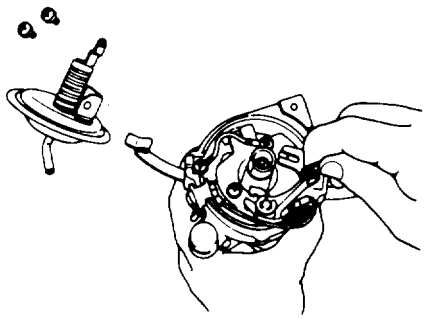


Fig. 4-211. Removing Contact Set

(4) When contact breaker is disassembled, be careful not to lose steel balls between breaker spring and breaker plate.

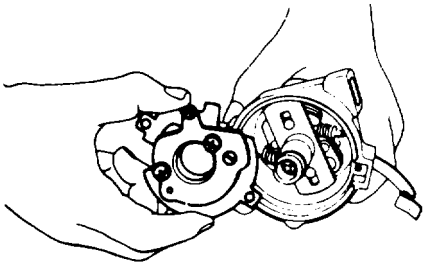


Fig. 4-212. Removing Contract Breaker

(5) Pull knock pin out and disconnect collar to remove the entire rotating parts.

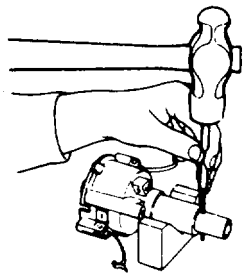


Fig. 4-213. Removing Knock Pin

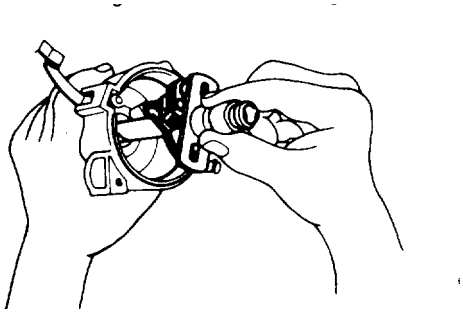


Fig. 4-214. Removing Rotation Parts

(6) When cam is to be removed, first remove set screw since shaft head is fastened by the screw to hold cam down. Put match mark across cam and shaft so that original combination can be restored at assembly.

(7) When governor weights and springs are disconnected, be careful not to stretch or deform governor springs.

After disassembling. apply grease to governor weights.

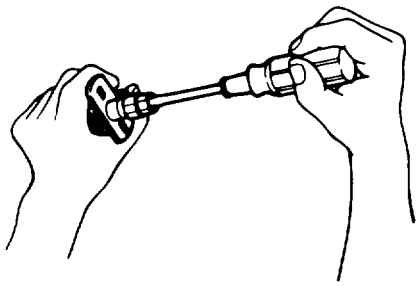
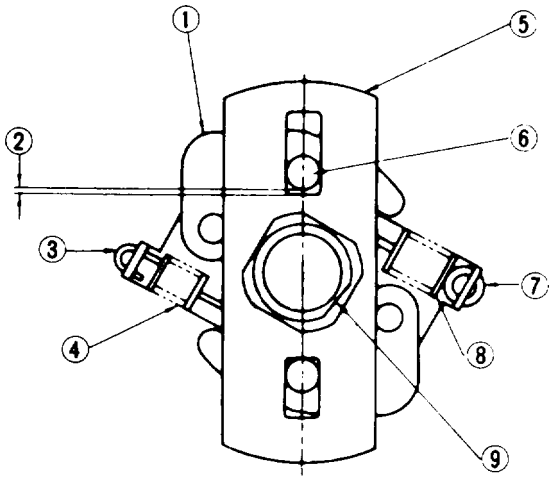


Fig. 4-215. Removing Cam

(2) ASSEMBLY

Assembly can be made in reverse sequence of disassembly.



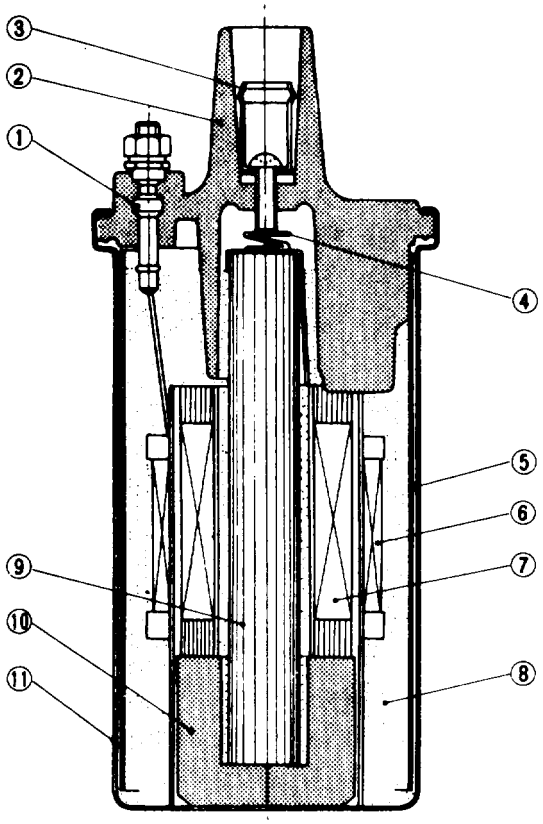
1. Governor weight
2. Clearance for start and end of advancing angle
3. Rectangular hook
4. Governor spring (B)
5. Cam plate
6. Weight pin
7. Circular hook
8. Governor spring (A)
9. Rotor positioning tip

Fig. 4-216. Setting Governor Spring and Cam

4-7-8. IGNITION COIL

The ignition coil is of an oil-filled type. The ignition coil case is filled with oil which has good insulating and heat-radiating characteristics.

High sparking voltage is produced from starting the engine to a high revolution by the external resistor which is used in the ignition coil circuit for 6R-200. The internal resistor limits, to a maximum, safe flow of the primary current through the coil and distributor contact points. Thus, it protects the contact points during slow speed operating when they are closed for long intervals.



1. Primary terminal
2. Secondary terminal
3. Cap
4. Spring
5. Side core
6. Primary coil
7. Secondary coil
8. Insulator oil
9. Center core
10. Segment
11. Case

Fig. 4-217. Construction

1. SPECIFICATIONS

DRIVE UNIT

Model	444-25

- **Tor-Co-Matic® Transmission**

Torque converter:	
Type	3-Elements, 1-Stage, 2-Phase
Stall torque ratio	3.0
Oil pressure setting	5-6.7 kg/cm^2 (71-95.3 psi)
Charging pump:	
Type	Gear type
Discharge (loaded)	32 ℓ/min (2650 rpm, 14 kg/cm^2) [8.5 U.S. gal (3000 rpm, 199 psi)]
Transmission:	
Type	Power shift
Gear ratio, forward	1.35
Gear ratio, reverse	1.35
Clutch facing (O.D. x I.D. x Thickness)	125 x 81 x 2.6 mm (4.92 x 3.19 x 0.102 in)
Area of clutch facing	71 cm^2 (11 in^2)
Oil pressure setting	11-14 kg/cm^2 (156.5-199 psi)
Amount of oil	7.0 ℓ (1.54 GB. gal, 1.85 U.S. gal)
Oil to be used	Engine oil (SAE 10 w) or Dextron II

- **Reduction Gear**

Reduction gear	Spiral bevel gear
Reduction ratio	2.50

- **Differential**

Reduction gear	Helical spur gear
Reduction ratio	5.700
Differential case	Banjo type
Differential gear	Straight bevel gear
Amount of oil	3.5ℓ (0.77 GB gal, 0.925 U.S. gal)
Oil to be used	Gear oil 90 w
Weight (in dry state)	165 kg (364 lbs)

STANDARD VALUE FOR MAINTENANCE

1. TORQUE CONVERTER

Unit: mm (in)

Checking Item		Standard Value	Service Limit
O.D. of oil seal sliding part of pump wheel		49.967-50.000 (1.967-1.969)	---
Flexible plate fitting bolt torque:	kg-cm (ft-lbs)	6.2-7.4 (0.045-0.54)	---
Drain plug tightening torque:	kg-cm (ft-lbs)	0.92-1.2 (0.067-0.087)	---

2. TORQUE CONVERTER HOUSING

Unit: mm (in)

Checking Item	Standard Value	Service Limit
Looseness of reverse idle gear ball bearing	Less than 0.2 (0.008)	More than 0.2 (0.008)
Looseness of output gear ball bearing	Less than 0.2 (0.008)	More than 0.2 (0.008)

3. CLUTCH PACK

Unit: mm (in)

Checking Item	Standard Value	Service Limit
I.D. of drive gear busing	35.025-35.050 (1.379-1.360)	---
Outside thrust washer thickness	3.4-3.5 (0.134-0.138)	---
Inside thrust washer thickness	2.9-3.0 (0.114-0.118)	---
Composite disk thickness	2.5-2.7 (0.0984-0.106)	2.1 (0.083)
Steel disk thickness Dimensions of clutch piston seal ring: Outer dia. x width x thickness	1.58-1.67 (0.062-0.066) 122 x 2.5 x 3.2 (4.8 x 0.098 x 0.126)	1.55 (0.061) ---
Dimensions of clutch piston inner seal ring: Outer dia. x width x thickness	40.2 x 2.98 x 1.7 (1.583 x 0.117 x 0.067)	---
Clearance between end plate and snap ring	1.2-1.8 (0.047-0.071) 1.0-1.6 (0.04-0.063)	---
I.D. of clutch piston	40.2-40.25 (1.583-1.585)	---
O.D. of drive gear rotating part on clutch shaft	34.989-35.000 (1.3775-1.378)	---

Checking item	Standard Value	Service Limit
Dimensions of clutch shaft seal ring: Outer dia. x width x thickness	F30.2 x 2.5 x 1.3 (1.189 x 0.098 x 0.051) R30.2 x 2.46 x 1.6 (1.189 x 0.097 x 0.063)	---
I.D. of clutch drum	122.00-122.05 (4.8034.805	---
Backlash of drive plate and gear spline	0.09-0.25 (0.0035-0.01)	
Clutch shaft ball bearing looseness	Less than 0.2 (0.008)	More than 0.2 (0.008)
Clutch shaft roller bearing looseness	Less than 0.2 (0.008)	More than 0.2 (0.008)

4. CONTROL VALVE

Unit: mm (in)

Checking Item		Standard Value	Service Limit
O.D. of change spool		24.959-24.980 (0.983-0.984	---
Clearance between change spool and valve body		---	0.1 (0.004)
O.D. of regulator spool		17.959-17.980 (0.707-0.708)	---
Clearance between regulator spool and valve body		---	0.1 (0.004)
Outside regulator spring:			
	Free length	101.5 (4)	---
	Setting length	91 (3.59)	---
	Setting load; kg/mm (lbs/in)	9/56 (19.9/2.205)	8.1/56 (17.9/2.205)
Inside regulator spring:			
	Free length	118.8 (4.677)	---
	Setting length	108 (4.25)	---
	Setting load; kg/mm (lbs/in)	11.9/90 (26.2/3.54)	10.7/90 (23.6/3.54)
Cover fitting bolt torque:	kg-cm (ft-lbs)	120-150 (8.7-10.9)	---
Detent body tightening torque:	kg-cm (ft-lbs)	200-250 (14.5-18.1)	---

5. INCHING VALVE

Unit: mm (in)

Checking Item	Standard Value	Service Limit
I.D. of inching spool fitting part of valve body	22.000-22.021 (0.866-02867)	---
O.D. of inching spool	21.959-21.980 (0.8645-0.8650)	---
O.D. of piston	21.959-21.980 (0.8645-0.8650)	---
Outer dia. of inching rod:		
at inching spool fitting part	9.972-9.987 (0.3926-0.3932)	---
at piston fitting part	10.966-10.984 (0.4322-0.4324)	---
at sliding part on valve body	21.959-21.980 (0.8645-0.8650)	---
at oil seal sliding part	15.957-16.000 (0.628-0.630)	---
Clearance between valve body and outer dia of each spool	---	0.1 (0.004)
Piston spring:		
Free length	36.1 (1.421)	---
Setting length	24 (0.945)	---
Setting load; kg (lbs)	5.7 (12.6)	5.13 (11.3)
Cover fitting bolt torque: kg-cm (ft-lbs)	430-560 (31.1-40.5)	---
Plug tightening torque: kg-cm (ft-lbs)	450-600 (32.6-43.4)	---

6. CHARGING PUMP

Unit: mm (in)

Checking Item	Standard Value	Service Limit
I.D. of casing subassembly bushing	50.076-50.101 (1.972-10973)	---
I.D. of drive gear bushing	36.000-36.025 (1.417-1.418)	---
I.D. of driven gear	19.006-19.017 (0.74800.749)	---
O.D. of drive gear rotating part on stator support	35.95-35.97 (1.415-1.416)	---
Torque of assembling bolts of casing and stator support: kg-cm (ft-lbs)	130-160 (9.4-11.6)	---

7. CASE COVER

Unit: mm (in)

Checking Item	Standard Value	Service Limit
Valve control lever end diameter	13.8-14.0 (0.543-0.55)	---

8. DIFFERENTIAL Unit mm (in)

Checking Item	Standard Value	Service Limit
Deflection of ring gear back face	0.05 (0.002)	---
Tightening bolt torque of ring gear and cross case: kg-m (ft-lbs)	4.8-6.4 (34.7-46.3)	---
I.D. of side gear fitting part on cross case	54.00-54.03 (2.126-2.127)	---
Clearance between side gear and drive shaft splines in rotational direction	0.04-0.10 (0.0016-0.004)	---
I.D. ef pinion gear	22.01-22.05 (0.867-0.868)	---
O.D. of pinion shaft	21.99-22.00 (0.8658-0.8661)	---
Bearing cap tightening bolt torque: kg-m (ft-lbs)	9.2-10.8 (66.5-78.1)	---
Backlash of side gear and pinion gear	0.15-0.25 (0.006-0.01) 78.513-78.583	--- 78.363
Displacement over seven (7) teeth of ring gear	(3.0915 3094)	(3.085)
Looseness of ball bearing at each side of cross case	---	0.2 (0.008)
Ring gear fitting surface deflection of cross case	0.05 (0.002)	---
Pinion gear thrust plate thickness	6.0 (0.236)	---
Pinion gear thrust plate thickness (replacement part)	5.8, 6.2, 6.4 (0.228, 0.244, 0.252)	---
Side gear thrust plate thickness	2.0 (0.079)	---
Side gear thrust plate thickness (replacement part)	1.8, 2.2, 2.3 (0.071, 0.866, 0.906)	---

9. OTHERS Unit: mm (in)

Checking Item	Standard Value	Service Limit
Clutch regulator valve pressure setting: kg/cm2 (psi)	11-14 (156.5-199)	---
Torque converter regulator valve pressure setting: kg/cm2 (psi)	5.5-6.8 (78.2-96.7)	---

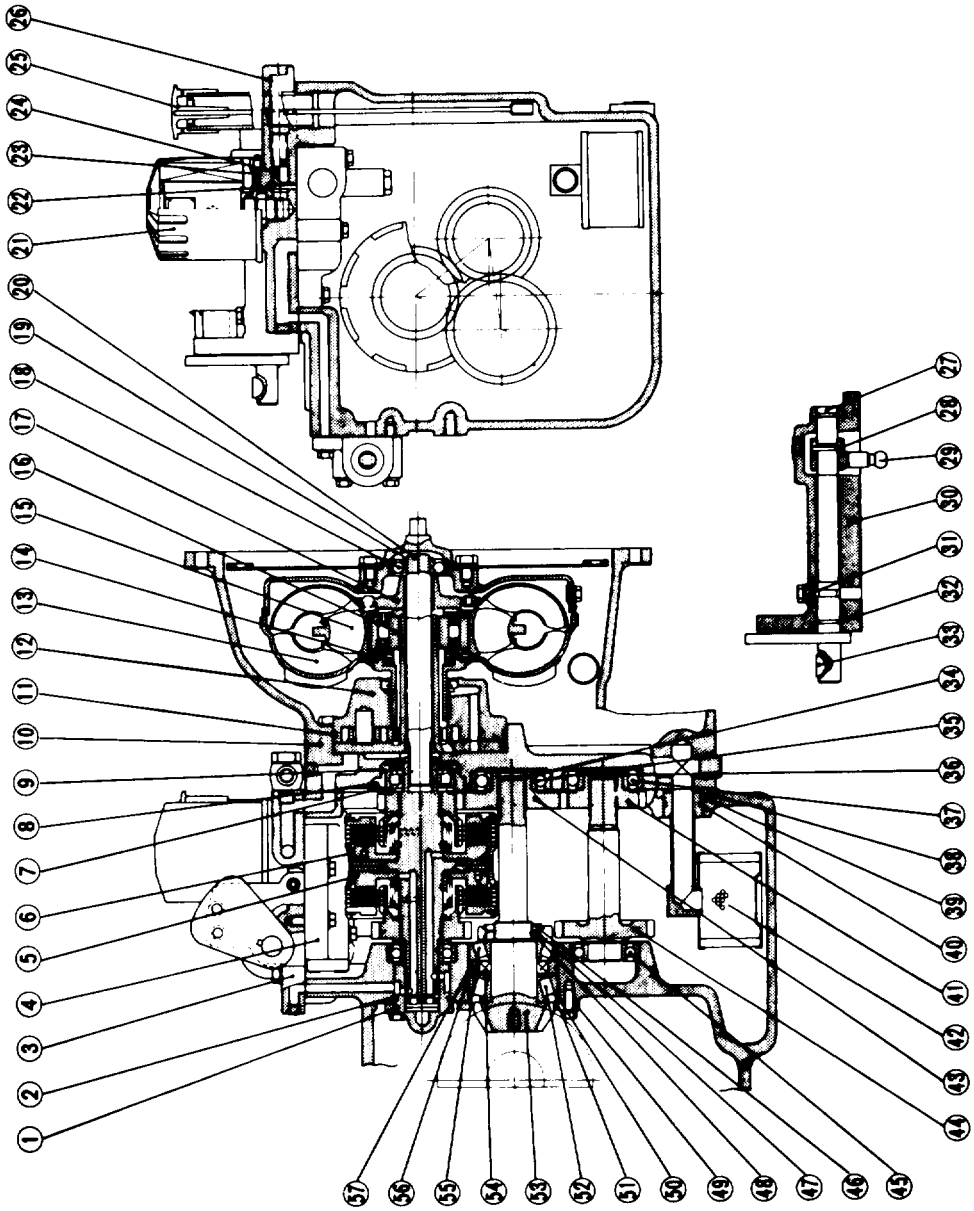


Fig. 4-218. Tor-Co-Matic® Transmission

1. Side cover
2. O-ring
3. Cover
4. Control valve
5. Hydraulic clutch
6. Hydraulic clutch
7. Bearing cage
8. Ball
9. O-ring
10. Converter housing
11. O-ring
12. Charging pump
13. Pump wheel
14. Thrust bearing
15. Stator wheel
16. Free wheel
17. Turbine wheel
18. Ball bearing
19. Snap ring
20. Turbine shaft
21. Inline filter
22. Roll pin
23. O-ring
24. Relief valve
25. Oil level gauge
26. Spring
27. Plug
28. Roll pin
29. Shift lever
30. Shaft
31. Stopper bolt
32. O-ring
33. Key
34. Snap ring
35. Ball bearing
36. Snap ring
37. Ball bearing
38. O-ring
39. Snap ring
40. O-ring
41. Reverse idle gear
42. Strainer
43. Output gear
44. Reverse gear
45. Ball bearing
46. Lock nut
47. Lock washer
48. Bearing nut
49. Bearing retainer
50. Shim
51. Spacer
52. Tapered roller bearing
53. Output shaft
54. Oil seal
55. Tapered roller bearing
56. Oil seal retainer
57. O-ring

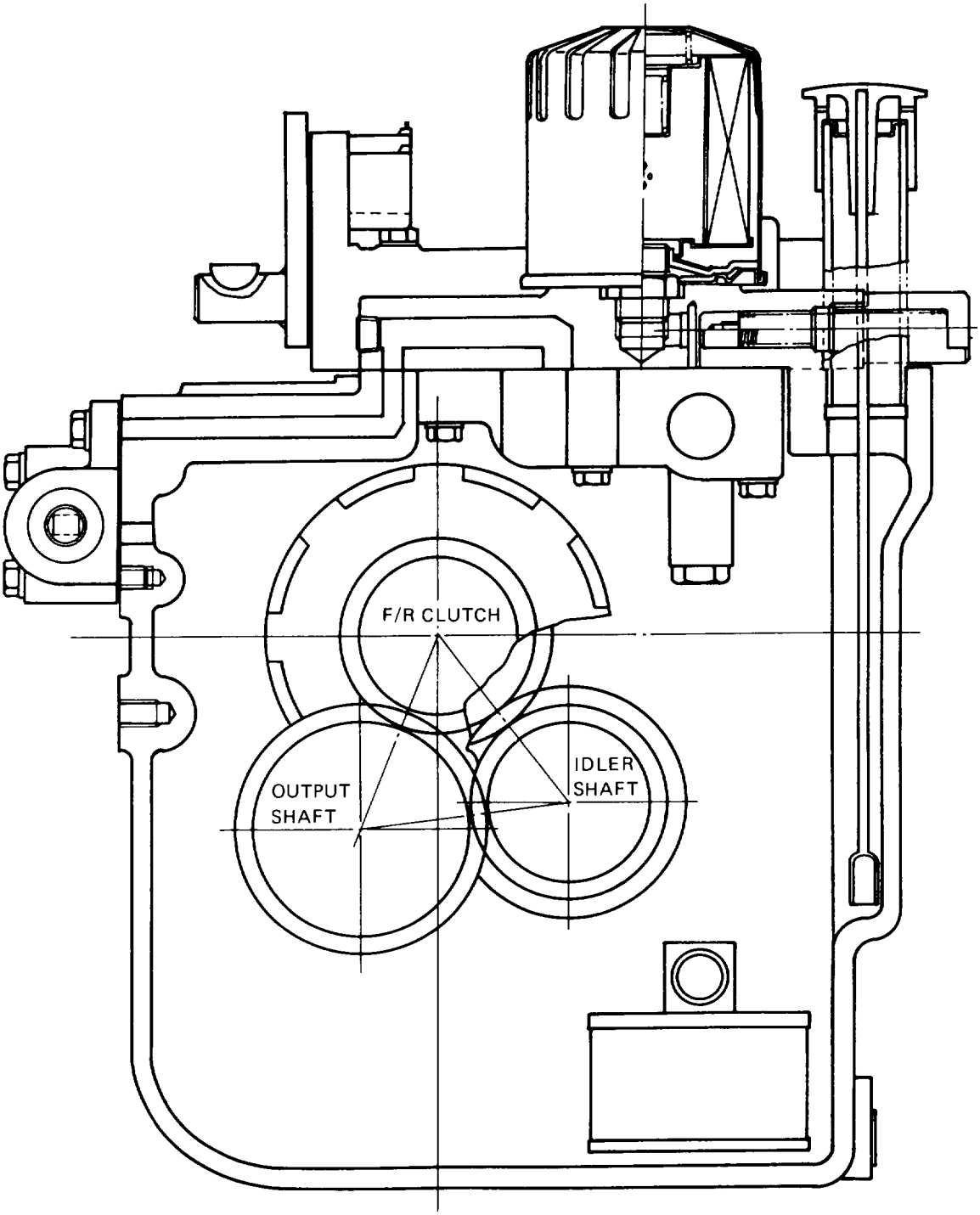


Fig. 4-219. Transmission Assembly Shaft Identification

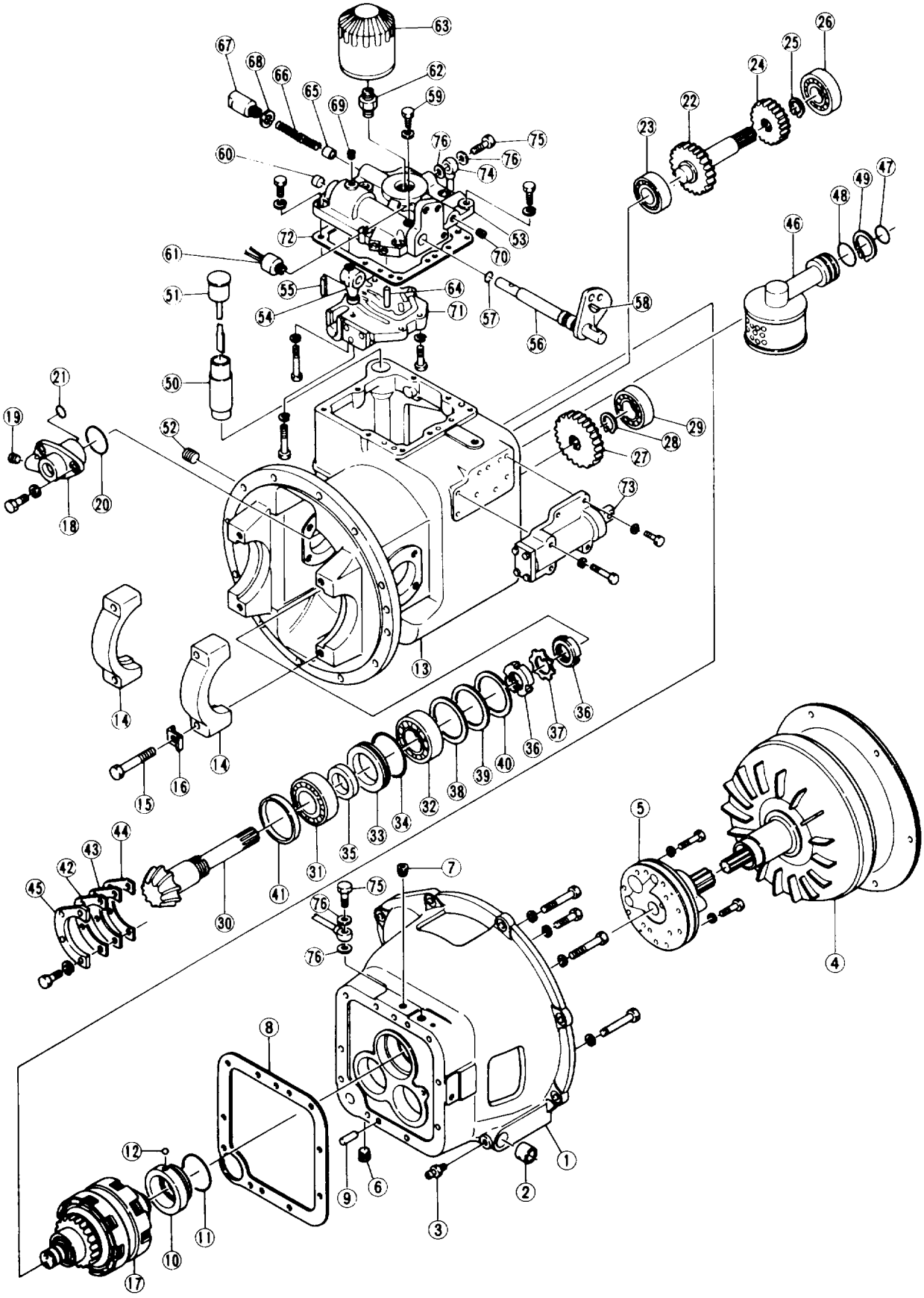


Fig. 4-220. Torque Converter Type Transmission

1. Torque converter housing
2. Bushing
3. Grease nipple
4. Torque converter
5. Charging pump
6. Plug
7. Plug
8. Packing
9. Knock-out pin
10. Bearing cage
11. O-ring
12. Lock ball
13. Transmission case
14. Bearing cap
15. Cap bolt
16. Lock plate
17. Clutch pack
18. Seal retainer
19. Plug
20. O-ring
21. O-ring
22. Reverse gear
23. Ball bearing
24. Reverse idle gear
25. Snap ring
26. Ball bearing
27. Output gear
28. Snap ring
29. Ball bearing
30. Output shaft
31. Tapered roller bearing
32. Tapered roller bearing
33. Seal retainer
34. O-ring
35. Oil seal
36. Bearing nut
37. Lock washer
38. Shim
39. Shim
40. Shim
41. Spacer
42. Shim
43. Shim
44. Shim
45. Set plate
46. Strainer
47. O-ring
48. O-ring
49. Snap ring
50. Pipe
51. Oil level gauge
52. Plug
53. Case cover
54. Shift lever
55: Roll pin
56. Shaft
57. O-ring
58. Key
59. Set bolt
60. Plug
61. Switch
62. Adapter
63. Filter
64. Roll pin
65. Piston
66. Spring
67. Spring retainer
68. Packing
69. Plug
70. Plug
71. Control valve
72. Packing
73. Inching valve
74. Pipe
75. Joint bolt
76. Packing

Hydraulic Clutch

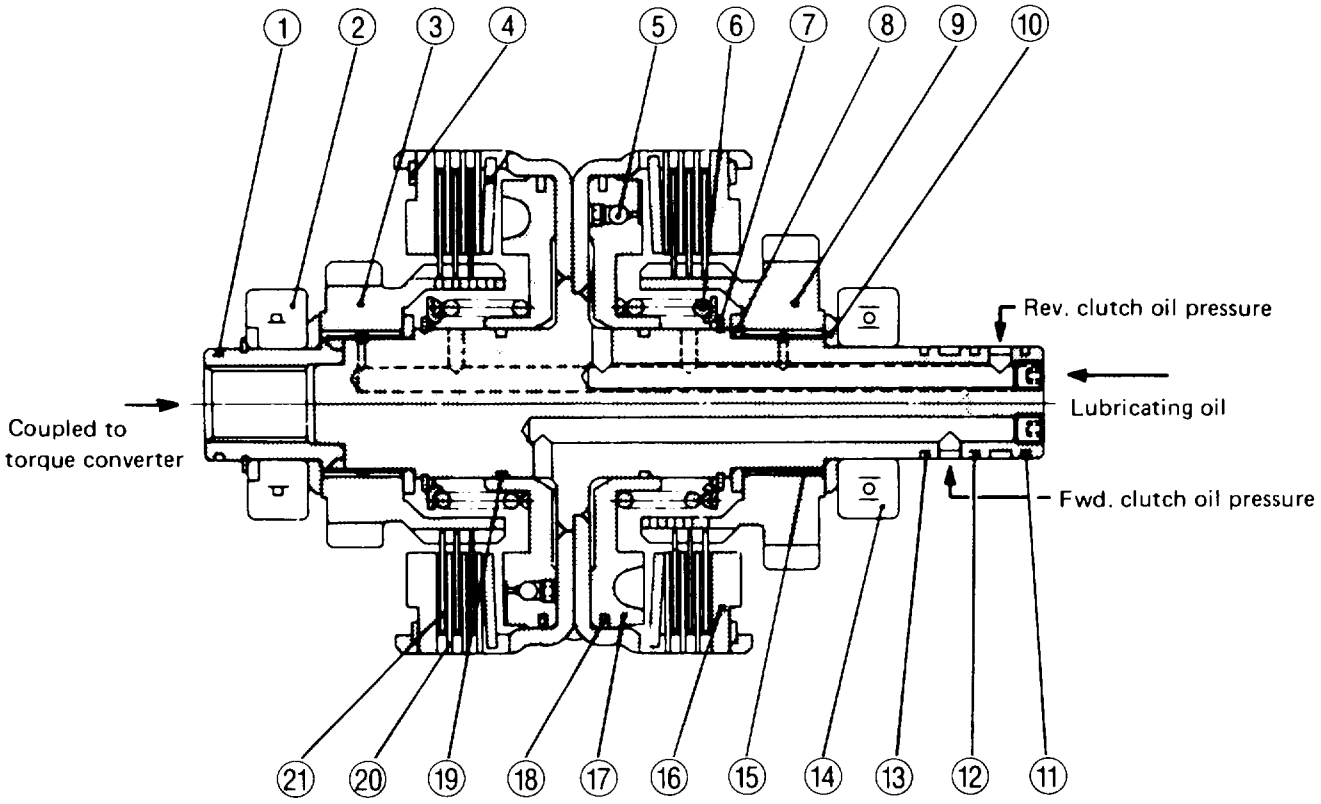


Fig. 4-221.

1. Seal ring
2. Roller bearing
3. Drive gear
4. Snap ring
5. Check ball
6. Return spring
7. Snap ring
8. Thrust washer
9. Drive gear
10. Thrust washer
11. Seal ring
12. Seal ring
13. Seal ring
14. Ball bearing
15. Bearing
16. Back plate
17. Piston
18. Piston ring
19. Seal ring
20. Steel plate
21. Composite disk

INCHING VALVE ASSY

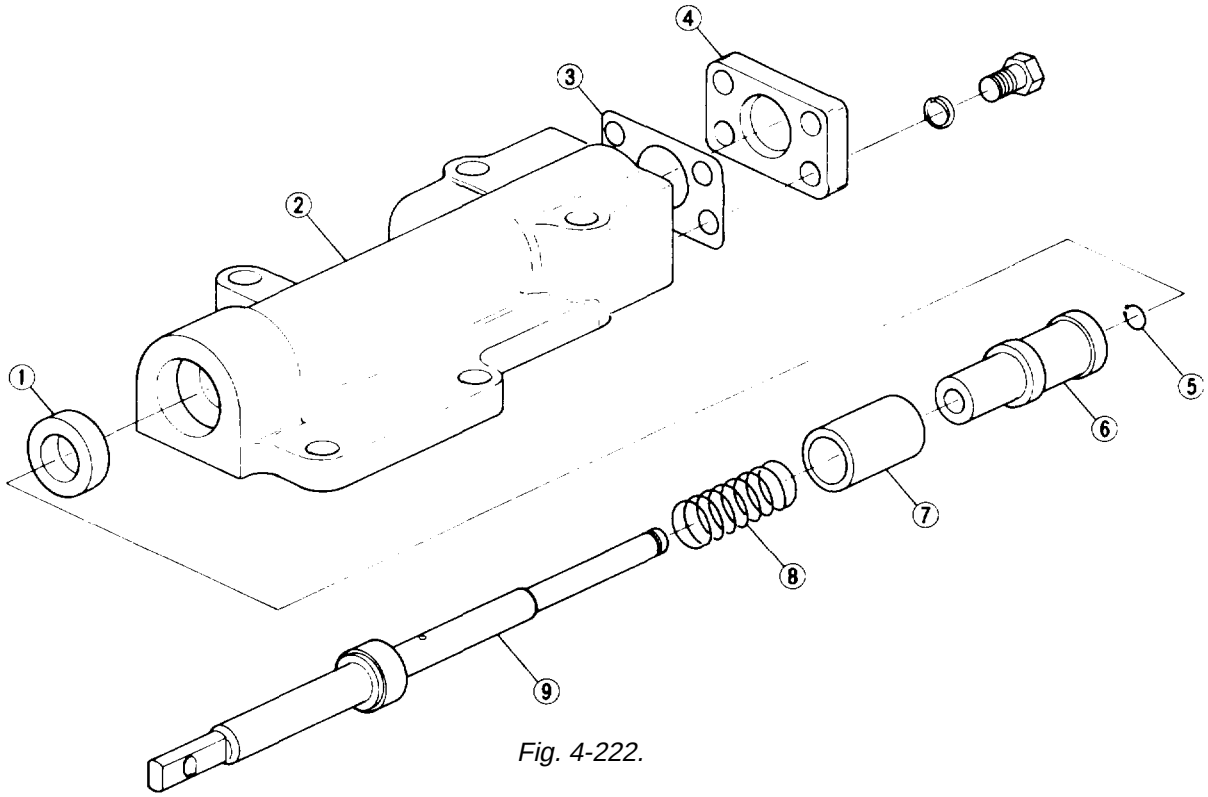


Fig. 4-222.

1. Oil seal
2. Valve body
3. Packing
4. Cover
5. Snap ring
6. Spool
7. Piston
8. Spring
9. Rod

OUTPUT SHAFT ASSY

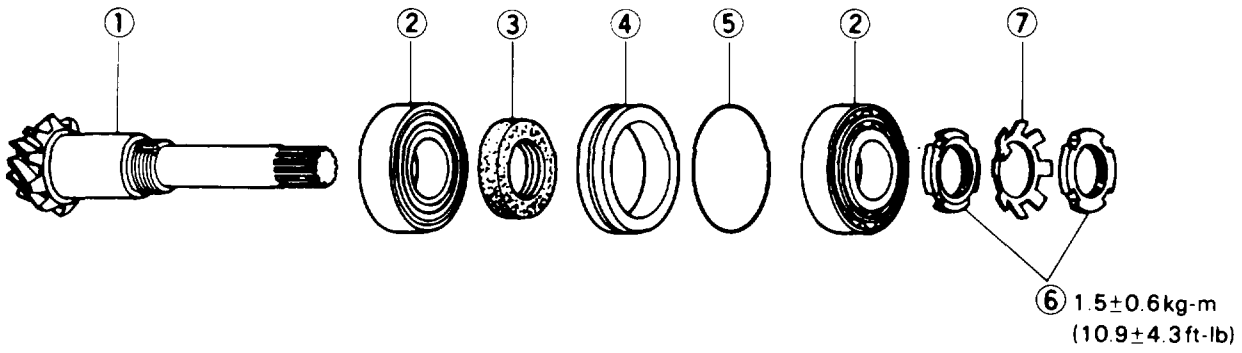
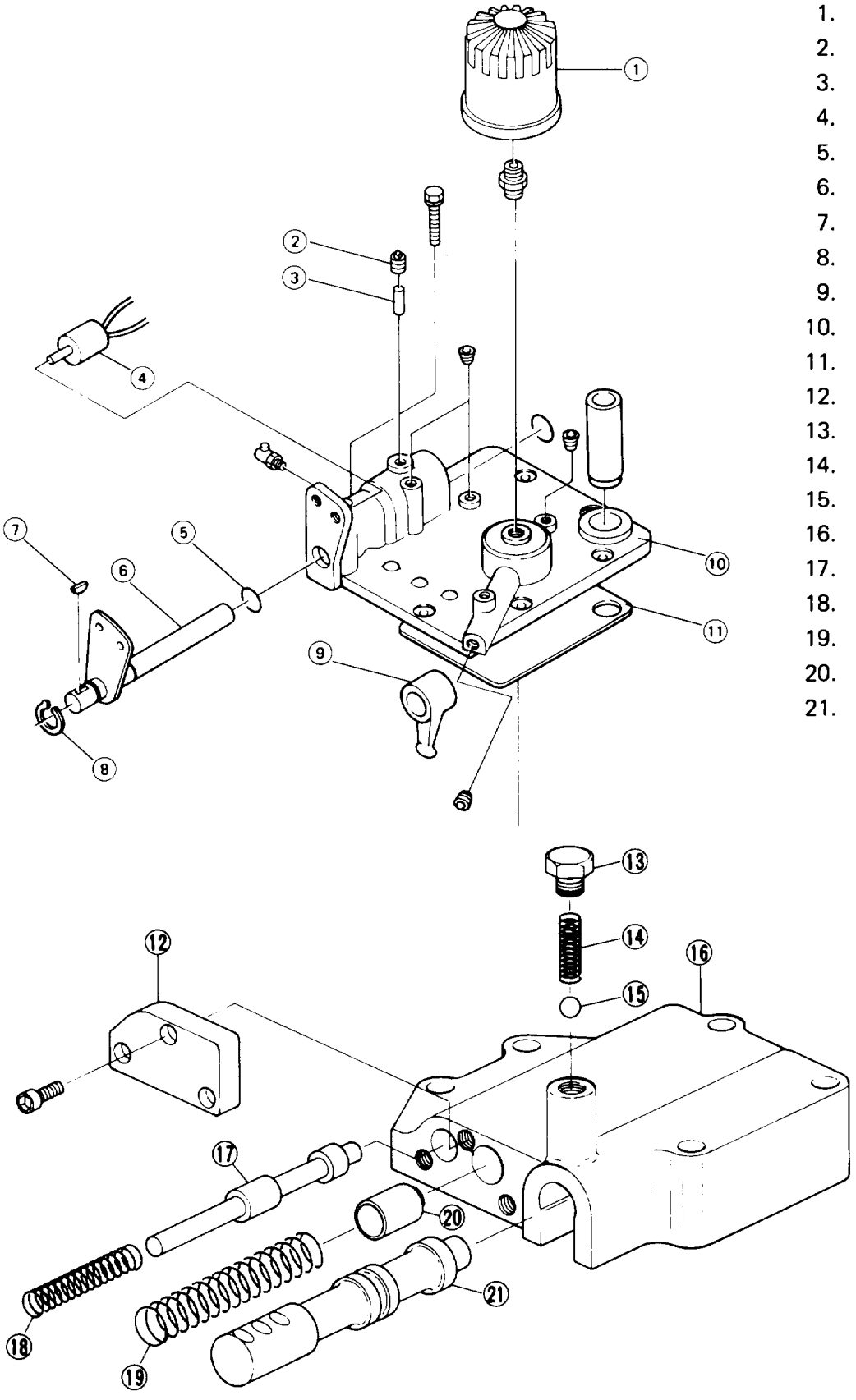


Fig. 4-223.

1. Output shaft
2. Tapered roller bearing
3. Oil seal
4. Spacer
5. O-ring
6. Bearing nut
7. Bearing washer

CONTROL VALVE



1. Filter
2. Plug
3. Roll pin
4. Back-up lamp switch
5. O-ring
6. Change rod
7. Key
8. Snap ring
9. Change lever
10. Case cover
11. Packing
12. Cover
13. Plug
14. Spring
15. Steel ball
16. Valve body
17. Spool
18. Spring
19. Spring
20. Piston
21. Change spool

Fig. 4-224.

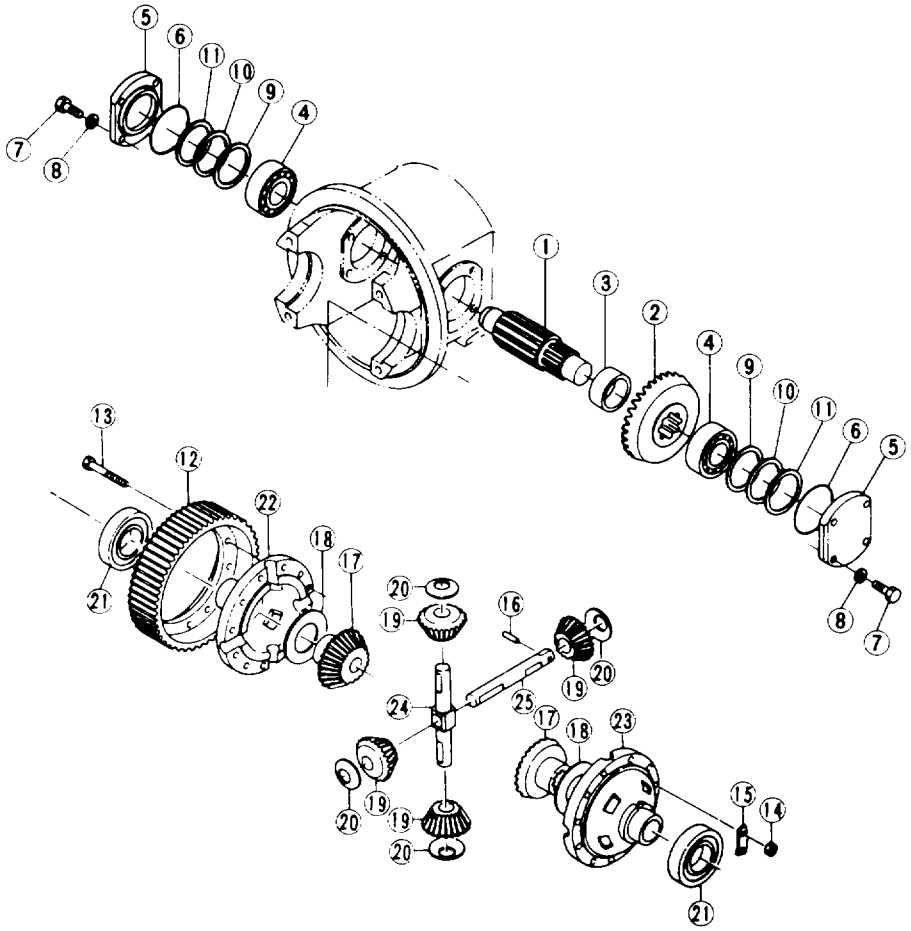


Fig. 4-225. Differential Components Parts

1. Gear shaft
2. Spiral bevel gear
3. Spacer
4. Tapered roller bearing
5. Bearing cap
6. O-ring
7. Bolt
8. Shim
9. Shim
10. Shim
11. Shim
12. Ring gear
13. Reamer bolt
14. Nut
15. Lock plate
16. Pin
17. Side gear
18. Washer
19. Pinion gear
20. Washer
21. Ball bearing
22. Flange half
23. Plain half
24. Pinion shaft
25. Pinion shaft

SCHEMATIC HYDRAULIC DIAGRAM

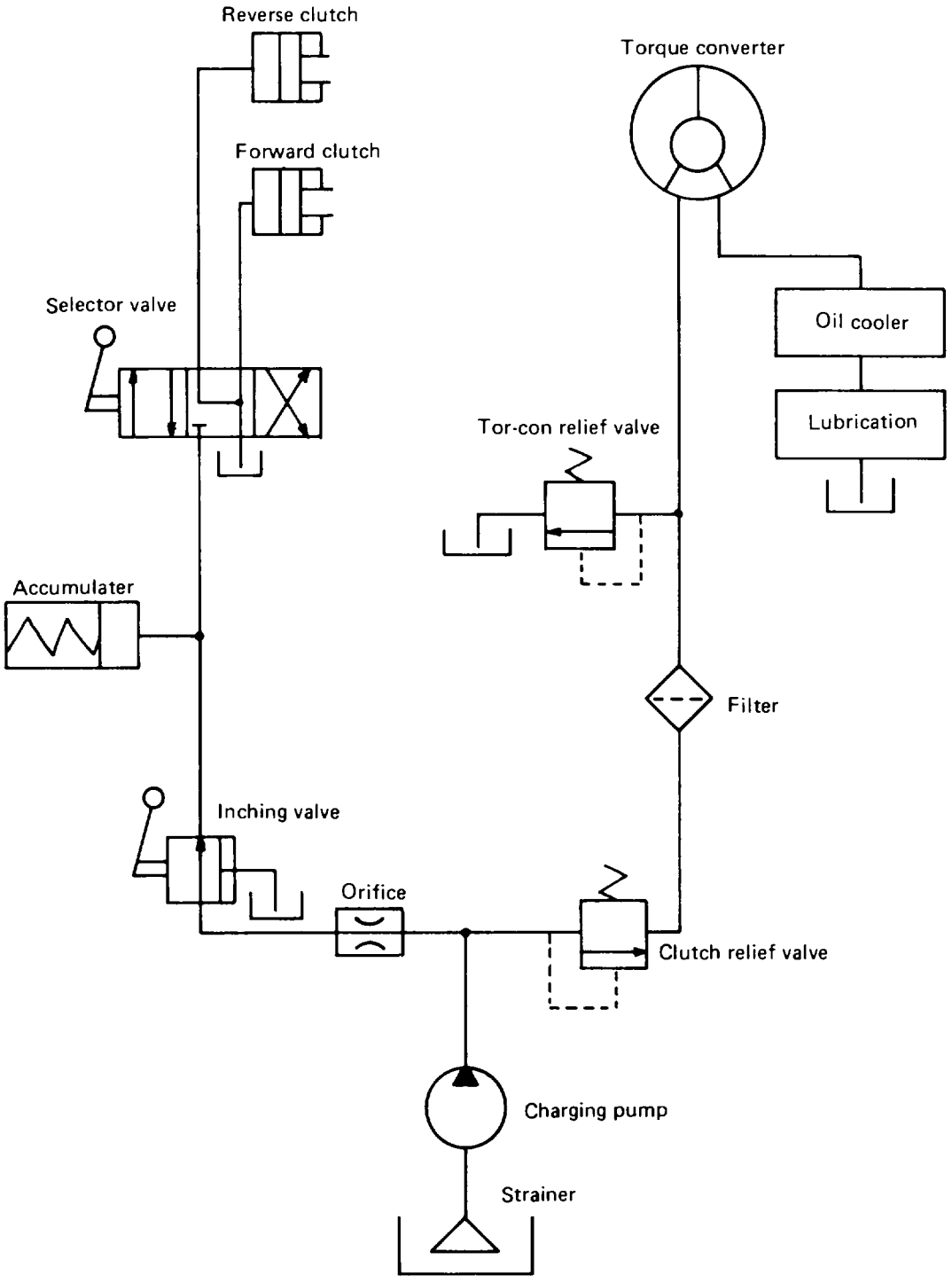


Fig. 4-226.

TROUBLESHOOTING

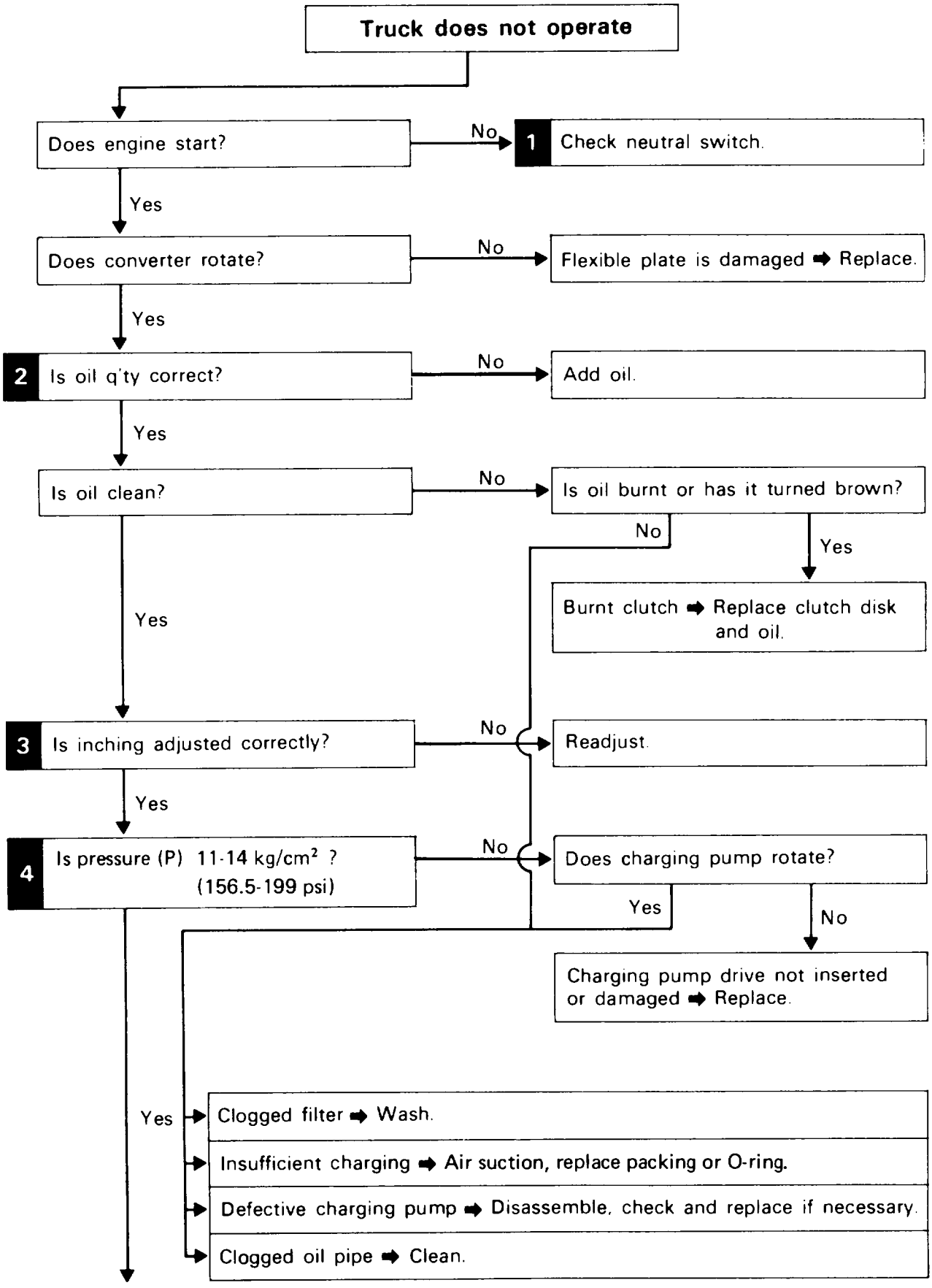
Cautions When the Machine is Disabled
When towing a machine equipped with Tor-Co-Matic® transmission, be sure to follow the requirements given below:

1. The drive shaft should be disconnected from the front wheel hub.
2. The change lever should be in neutral position.

These measures prevent seizure. With the torque converter pump idle, normal lubrication is not taking place and rotation from the front wheels is transmitted to the transmission gears and multi-disk clutch, resulting In heat and possible seizure.

SYMPTOM 1 Truck does not operate 4-136
SYMPTOM 2 Poor acceleration or poor gradeability..... 4-137
SYMPTOM 3 Excessively high oil temperature..... 4-139
SYMPTOM 4 Truck moves even in neutral position..... 4-139
SYMPTOM 5 Abnormal sound (buzzing) 4-141
SYMPTOM 6 Oil leakage 4-142

SYMPTOM 1



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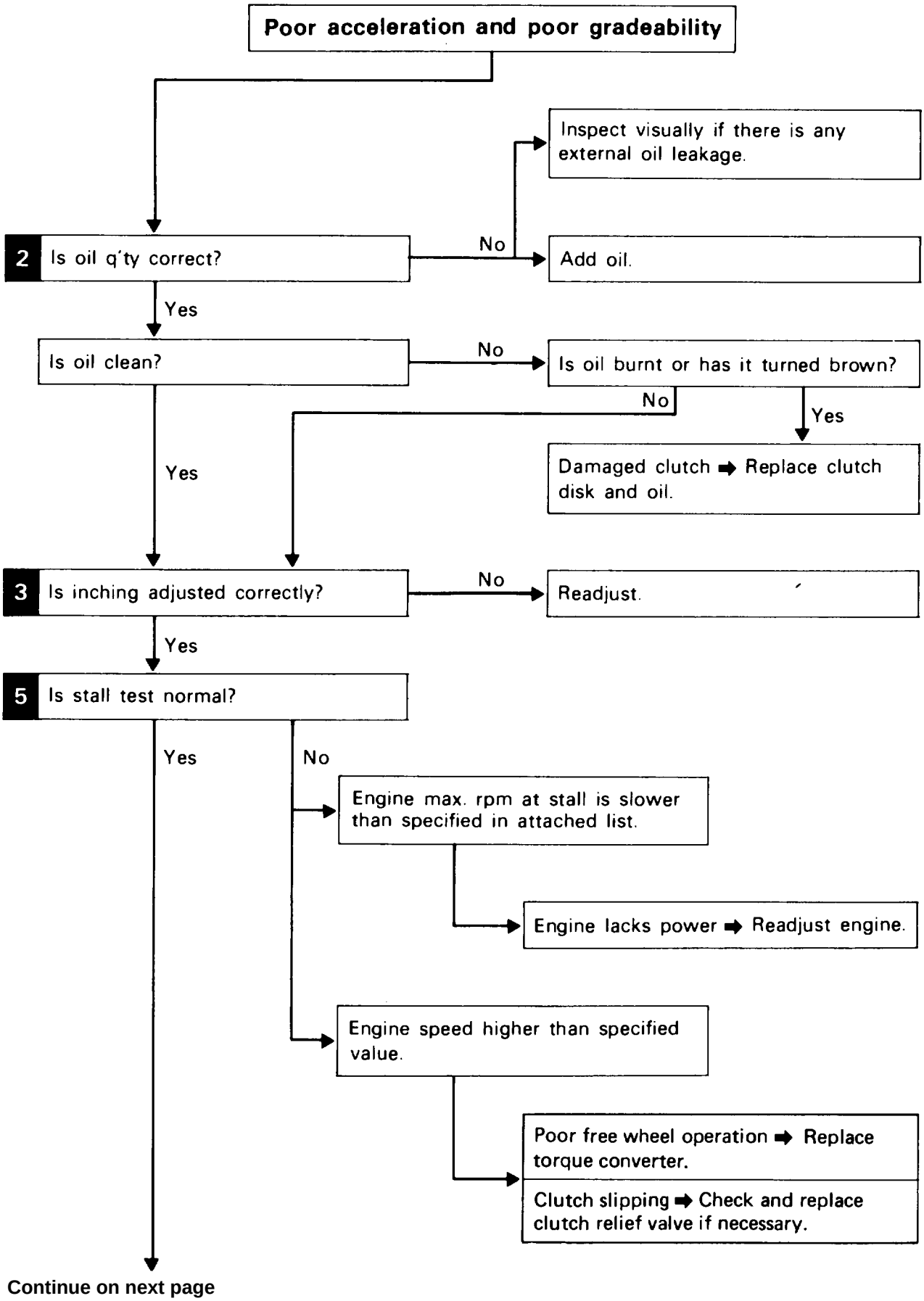
SYMPTOM 2


Poor acceleration and poor gradeability
Inspect visually if there is any external oil leakage.
2 Is oil q'ty correct?
No
Add oil.
Yes
Is oil clean?
No
Is oil burnt or has it turned brown?
No
Yes
Damaged clutch ➡ Replace clutch disk and oil.
Yes
3 Is inching adjusted correctly?
No
Readjust.
Yes
5 Is stall test normal?
Yes
No
Engine max. rpm at stall is slower than specified in attached list.
Engine lacks power ➡ Readjust engine.
Engine speed higher than specified value.
Poor free wheel operation ➡ Replace torque converter.
Clutch slipping ➡ Check and replace clutch relief valve if necessary.

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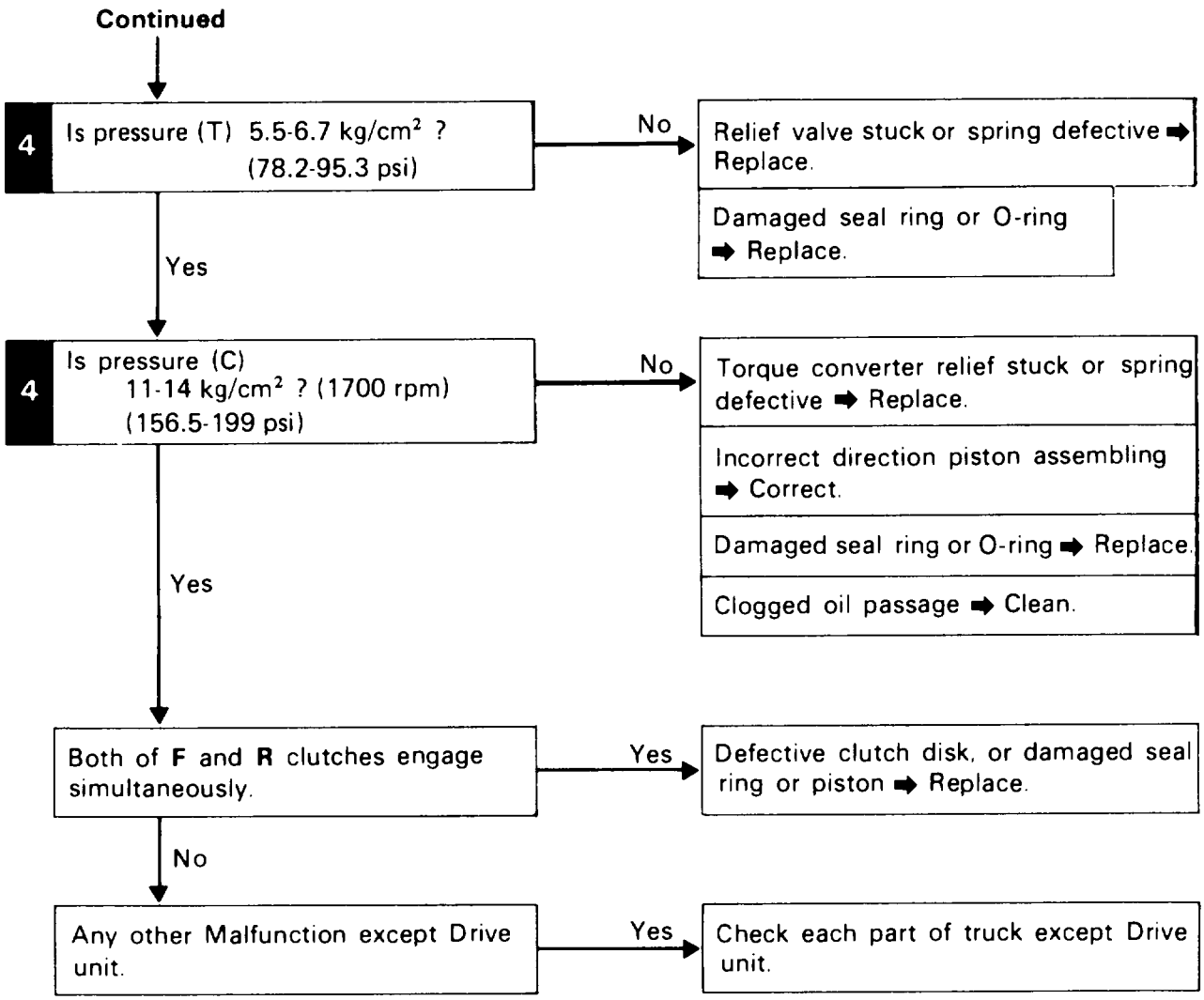
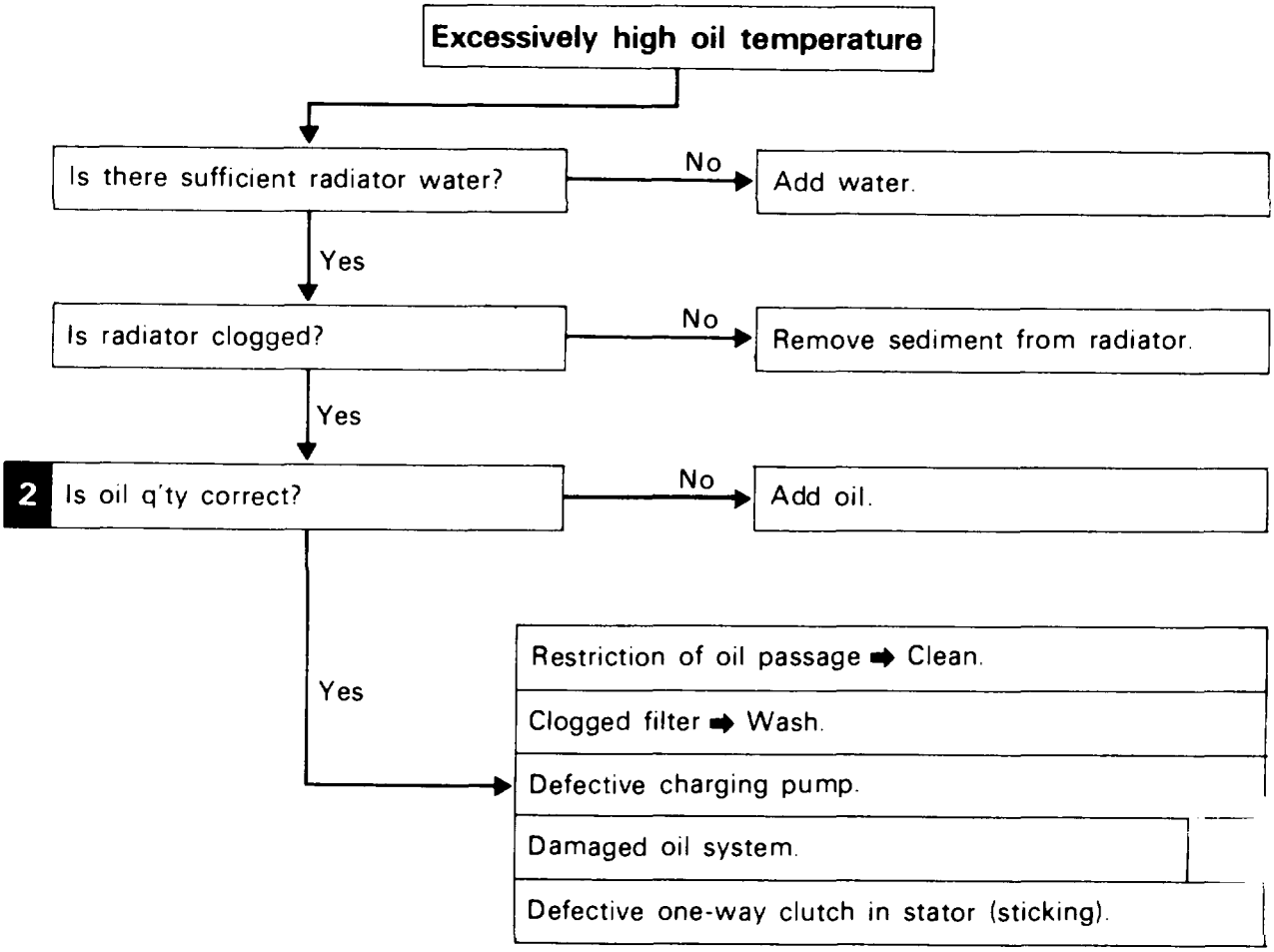
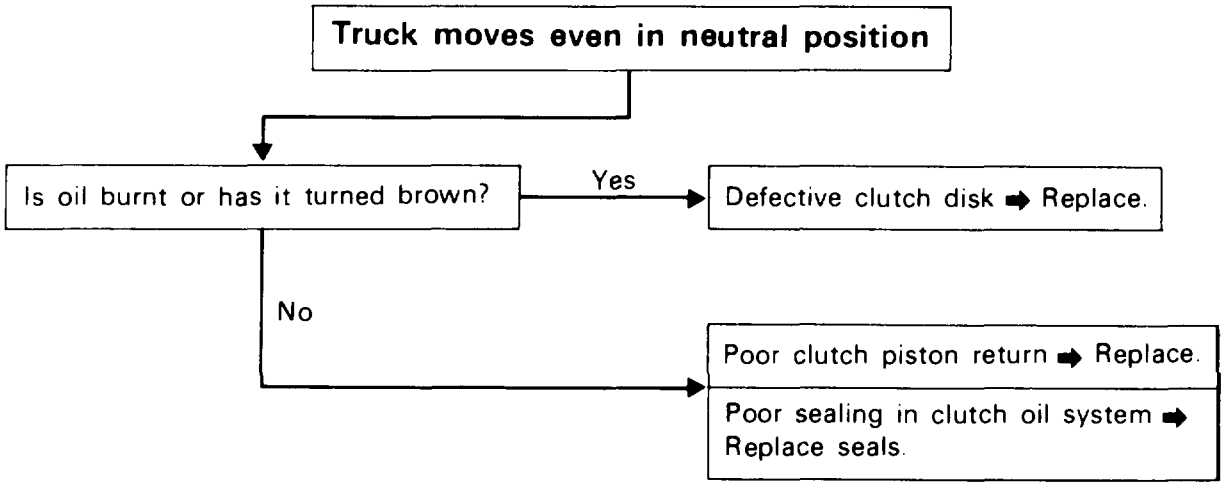

Continued
4
Is pressure (T) 5.5-6.7 kg/cm² ? (78.2-95.3 psi)
No
Relief valve stuck or spring defective ➡ Replace.
Damaged seal ring or O-ring ➡ Replace.
Yes
4
Is pressure (C) 11-14 kg/cm² ? (1700 rpm) (156.5-199 psi)
No
Torque converter relief stuck or spring defective ➡ Replace.
Incorrect direction piston assembling ➡ Correct.
Damaged seal ring or O-ring ➡ Replace.
Clogged oil passage ➡ Clean.
Yes
Both of F and R clutches engage simultaneously.
Yes
Defective clutch disk, or damaged seal ring or piston ➡ Replace.
No
Any other Malfunction except Drive unit.
Yes
Check each part of truck except Drive unit.

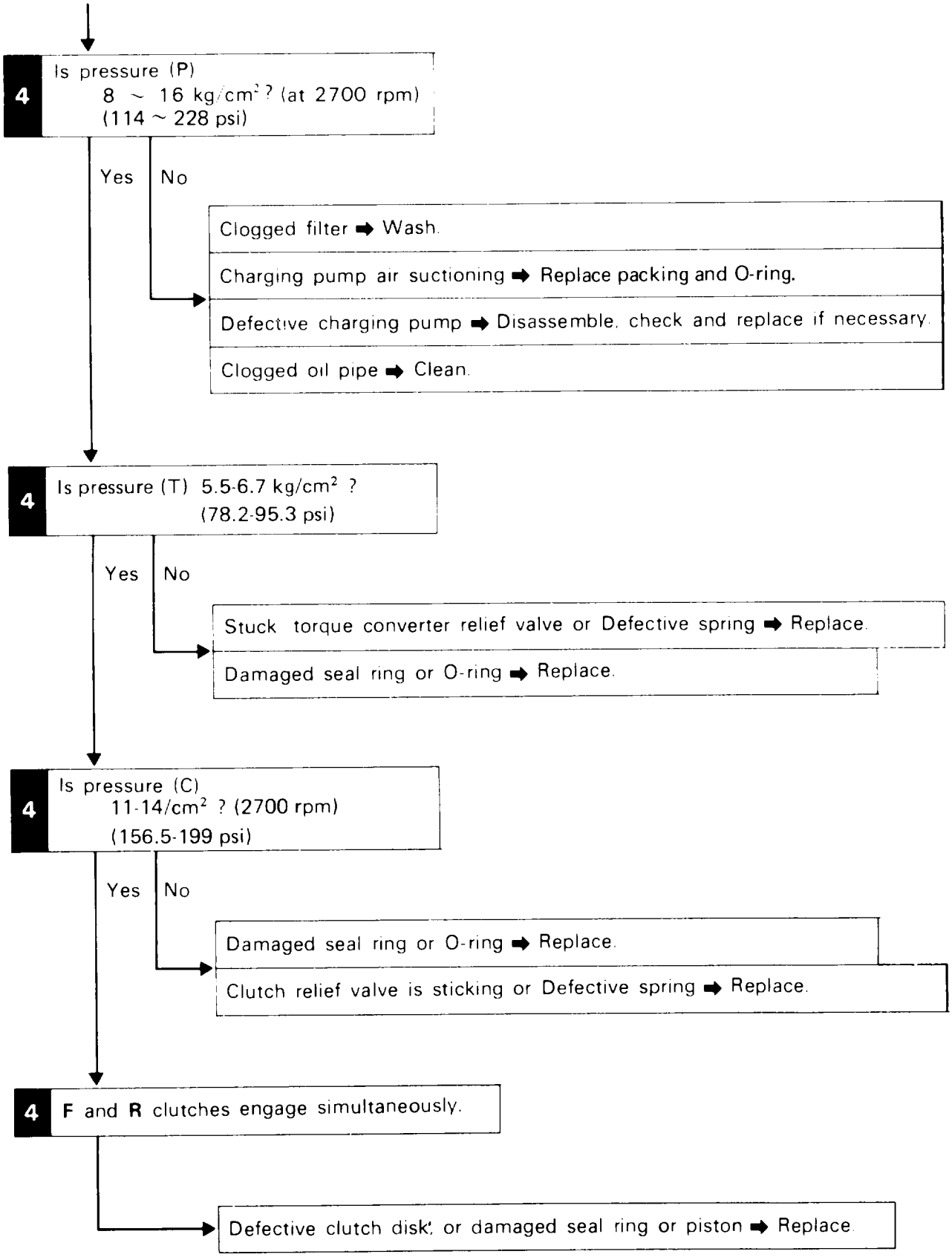
SYMPTOM 3



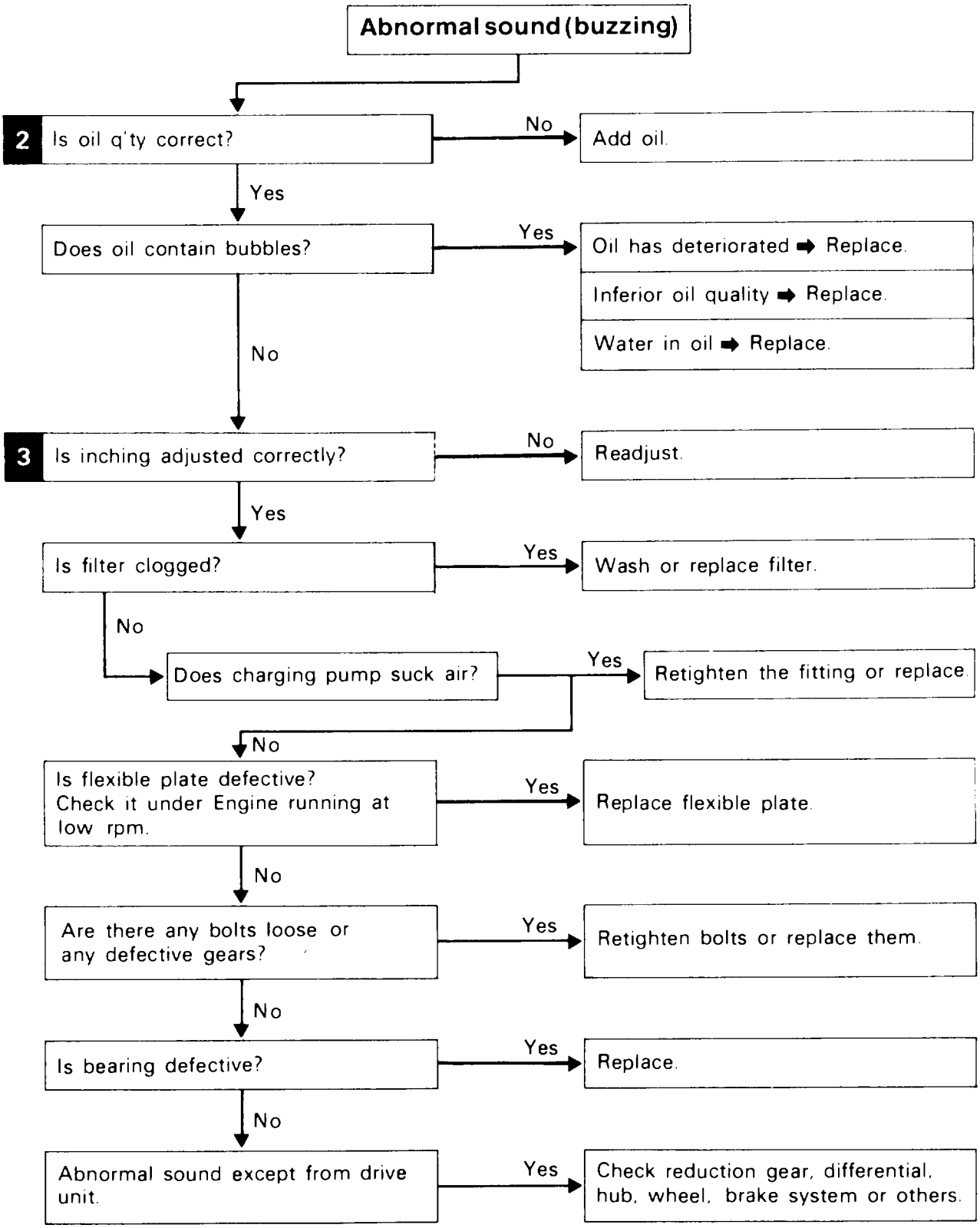
SYMPTOM 4


Truck moves even in neutral position
Is oil burnt or has it turned brown?
Yes
Defective clutch disk ➡ Replace.
No
Poor clutch piston return ➡ Replace.
Poor sealing in clutch oil system ➡ Replace seals.

Continued


4 Is pressure (P) 8 ~ 16 kg/cm² ? (at 2700 rpm) (114 ~ 228 psi)
Yes
No
Clogged filter ➡ Wash.
Charging pump air suctioning ➡ Replace packing and O-ring.
Defective charging pump ➡ Disassemble, check and replace if necessary.
Clogged oil pipe ➡ Clean.
4 Is pressure (T) 5.5-6.7 kg/cm² ? (78.2-95.3 psi)
Yes
No
Stuck torque converter relief valve or Defective spring ➡ Replace.
Damaged seal ring or O-ring ➡ Replace.
4 Is pressure (C) 11-14/cm² ? (2700 rpm) (156.5-199 psi)
Yes
No
Damaged seal ring or O-ring ➡ Replace.
Clutch relief valve is sticking or Defective spring ➡ Replace.
4 F and R clutches engage simultaneously.
Defective clutch disk, or damaged seal ring or piston ➡ Replace.

SYMPTOM 5


Abnormal sound (buzzing)
2 Is oil q'ty correct?
No
Add oil.
Yes
Does oil contain bubbles?
Yes
Oil has deteriorated ➡ Replace.
Inferior oil quality ➡ Replace.
Water in oil ➡ Replace.
No
3 Is inching adjusted correctly?
No
Readjust.
Yes
Is filter clogged?
Yes
Wash or replace filter.
No
Does charging pump suck air?
Yes
Retighten the fitting or replace.
No
Is flexible plate defective? Check it under Engine running at low rpm.
Yes
Replace flexible plate.
No
Are there any bolts loose or any defective gears?
Yes
Retighten bolts or replace them.
No
Is bearing defective?
Yes
Replace.
No
Abnormal sound except from drive unit.
Yes
Check reduction gear, differential, hub, wheel, brake system or others.

SYMPTOM 6 **OIL LEAKAGE**

Possible caused and symptom	Corrective action
Oil leakage from the transmission gear case or from the connecting portion between the transmission gear case and the pump wheel is caused by cracks in the case, and loose or damaged pipe	
1. Torque converter	
1 Oil leakage from the mounting portion the centering flange.	Replace torque converter assembly.
2 Oil leakage from the welded portion between the torque converter case and the pump wheel.	Replace torque converter assembly.
3 Oil leakage from the oil seal of the pump wheel boss.	Check the seal lip and pump wheel boss sliding portion for cracks and wear, and if necessary replace.
4 Oil leakage from cracks in the torque converter case.	Replace torque converter assembly.
2. Power shift transmission	
1 Oil leakage from the connecting portion between the torque converter housing and the transmission gear case.	Retighten the bolts or replace the packing
2 Oil leakage from the O-ring or the oil seal of the output shaft.	Check the seal lip and pump wheel boss sliding portion for cracks and wear, and if necessary, replace.
3 Oil leakage from the oil cooler pipe.	Check the pipe for cracks or damage, and if necessary, repair or replace
4. Oil leakage from the transmission gear case. a Mixed with water. b Mixed with air c Clogged air breather.	 If the oil is cloudy, replace the oil Retighten the pipe connecting portion or replace the seal washer. Check the air intake hole, and if necessary, clean the hole.
5 Oil leakage from the drain plug	Retighten.
6. Oil leakage from the cracks in the transmission gear case.	Repair or replace the defective part.

MAINTENANCE AND CHECKING

⚠CAUTION

Pay special attention to the following items during operation, or else the service life of the **Tor-Co-Matic®**, transmission will be shortened:

1. Changing the transmission direction while the truck Is still moving must not be substituted for braking.
   Reason:
   It will hasten deterioration of the torque converter oil
2. Inching operation for a long time at high rpm must be avoided

   Reason:
   The high temperature of the oil, a result of clutch disk heating, will cause deterioration of the torque converter oil and damage in the clutch disk.
3. Successive stalled driving must not be done for more than 30 seconds.
   Reason
   The high temperature of the torque converter oil will hasten deterioration of the torque converter oil, oil seal, and O-ring.

2.5.1. NEUTRAL SWITCH INSPECTION PROCEDURE

(When engine does not start)

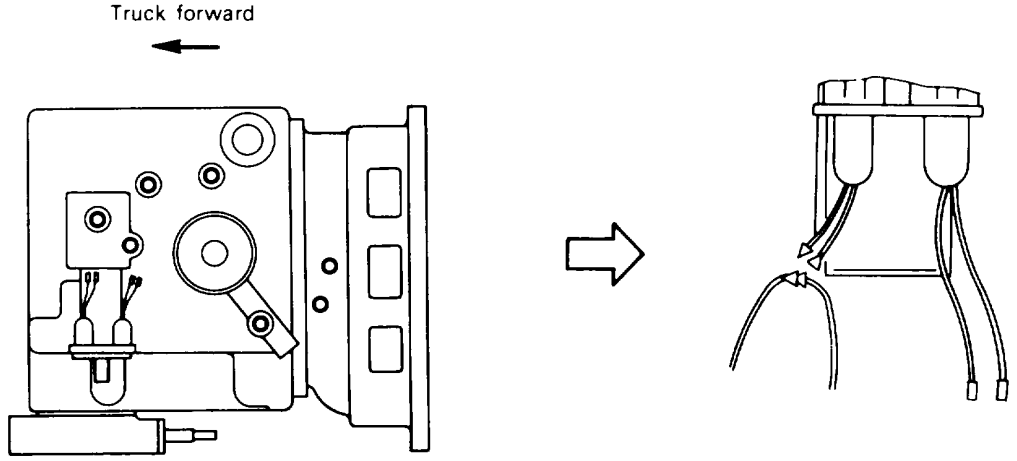


Fig. 4-227. Neutral Switch Inspection

1. Connect the wiring of the neutral switch as shown
2. Turn the starter switch ON.
3. If the engine can be started, the neutral switch is defective or not engaged-➔replace or adjust.

2.5.2. CHECKING AND CHANGING OIL IN THE TORQUE CONVERTER

(1) Interval or oil check and replacement

Check	Every 100 hours or every month.
First replacement	After 600 hours of operation or 6 month, whichever comes first.
Second and subsequent replacements	Every 1,200 hours of operation or every 12 months, whichever comes first.

(2) Interval of strainer check

First check	After 600 hours of operation or 6 months, whichever comes first.
Second and subsequent checks	Every 1.200 hours or every 12 months, whichever comes first.

(3) Oil level

Essential points when checking the oil level standard quantity 7.0 liters (1.5 G.B. gal, 1.9 U.S. gal).
Volume from upper end to lower end 0.5 liter (0.11 G.B. gal, 0.13 U.S. gal).

1. The oil level should be kept at the high level mark.
2. Start the engine and keep it idling for five minutes to let the oil circulate through the torque converter valves and pressurized oil circuit.
3. Stop the engine, immediately take out the level gauge and confirm that the oil on the gauge shows the standard level.
4. Add fresh oil up to the high level mark when necessary.
5. If there is too much oil, remove the drain plug and discard oil down to the standard level.

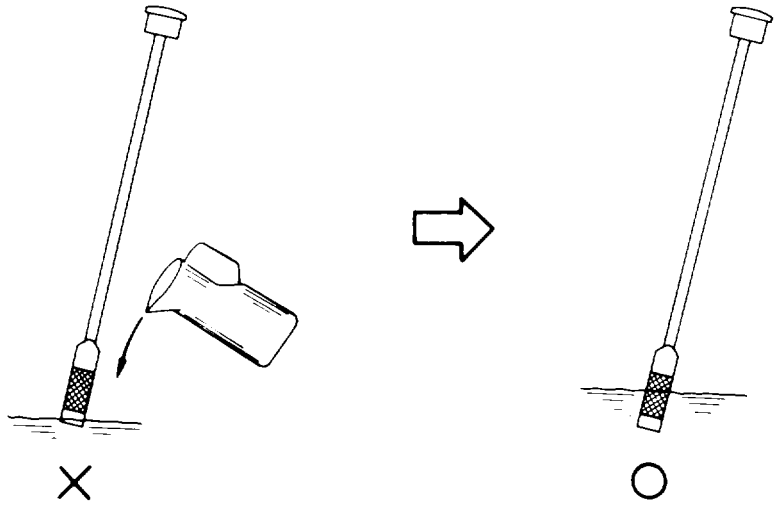


Fig. 4-228. Oil Level

NOTE
Neglecting to maintain the correct oil level will cause the following trouble.

i) When the oil level is too low
Air will enter the pressurized oil circuit, the control valve will generate an abnormal noise, and the **Tor-Co-Matic**® transmission performance will be down graded because normal pressure will not be applied to the torque converter and clutches.

ii) When the oil level is too high
The oil will be agitated by the gears and froth. Oil leakage and agitation loss will down grade the **Tor-Co-Matic**® transmission performance.

(4) Daily or weekly checking points

Checking the following points at least once a week will aid in the detection of the cause of trouble.

1. Oil leakage from the transmission.
2. Oil leakage from the oil cooler hose joints.
3. Abnormal noise when idling.
4. Change of the degree of shock when shifting.
5. Oil surface condition.
6. Unusual odor of oil.
7. Dirty oil.
8. Dirt in the air breather.

(5) Check after changing oil

No.	Oil Condition	Cause	Inspection	Corrective Action
1	White (Milky) oil Intermixing with coolant	Water intermixing	Remove the radiator cap and visually check the coolant surface for floating oil.	Repair the radiator when oil floating on the surface is observed. Drain oil and replace.
2	Intermixing of metal dust (excluding magnetic dust)	Unusual wear and breakage of internal parts.	Inspect the oil strainer.	Analyze T/M and check when metal dust is observed on the filter.

(6) Oil brands (recommended)

Maintenance and checking of the torque converter oil are Important because the performance and service life of the torque converter Is greatly influenced by the quality and nature of the torque converter oil.

The following brands of oil are recommended

Transmission Fluid	
EXXON (ESSO)	Automatic Transmission Fluid
MOBIL	Mobil Fluid 200
SHELL	Shell Donax T-6
CALTEX	Texamatic Fluid

		SAE
Type A. Suffix A	Dexron® Type	SAE10W

INCHING (BRAKE) PEDAL ADJUSTING PROCEDURE

1. Release the parking brake.
2. Jack up the front of truck so that the front wheels can rotate freely, and block the rear wheels.
3. Adjust the upheight of the right and left pedals for 110 to 120 mm (4.3 to 4.7 in).
4. Install an oil pressure gauge (0 to 20 kg/cm2 capacity) on the F port of the transmission control valve.
5. Start the engine, and place the change lever in forward.
6. Run the engine at 1500 rpm, and while the left side pedal is being pressed approx. 2 mm (0.08 in) turn the turn buckle clockwise until the oil pressure begins to decrease.
7. Run the engine at idle rpm (650 rpm), and place the change lever in neutral. Press the right side pedal approximately 60 mm (2. in) holding it adjust the push rod length so that the push rod of master cylinder contacts the piston.
8. Extend the Interlocking bolt until it contacts the round bar of the right side pedal.

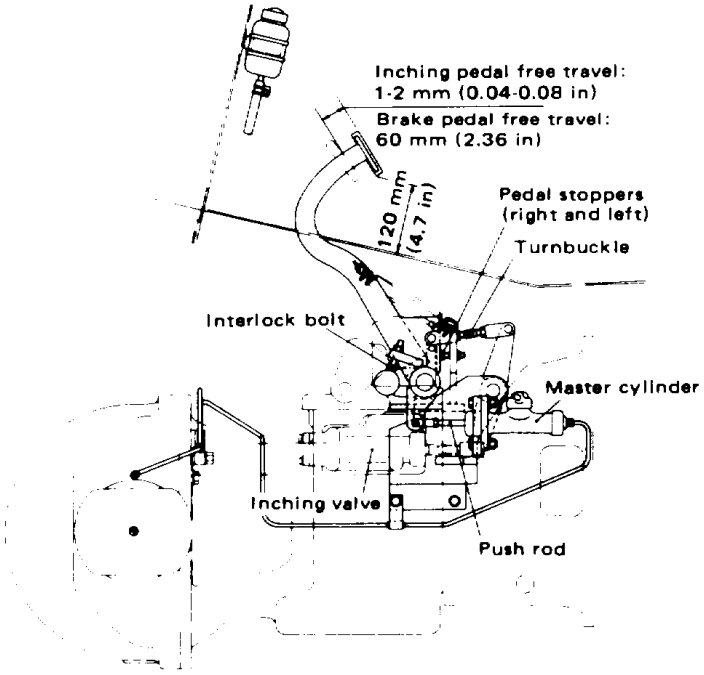


Fig. 4-229.

2.5.4. MEASURING OIL PRESSURE

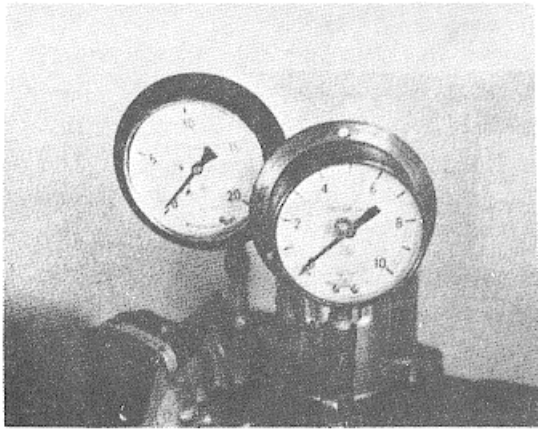


Fig. 4-230. Oil Pressure Measurement of Torque Converter and Clutch

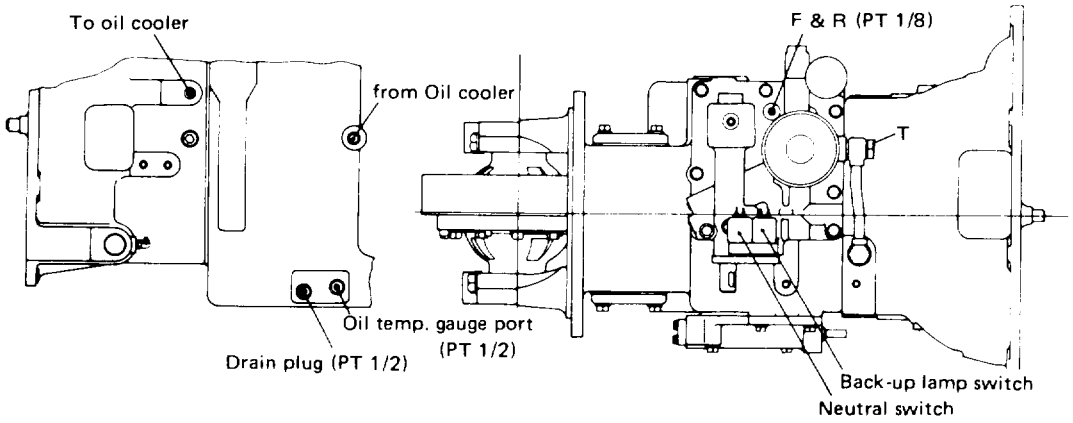


Fig. 4-231. Torque Converter and Clutch Oil Pressure Inspection Hole Plugs

Check point	Pressure kg/cm^2 (Psi)
T: Torque converter.....	5.5-6.7 (78.2-95.3)
F: Forward.....	11-14 (156.5-199)
R: Reverse	11-14 (156.5-199)

(1) Measuring the oil pressure

1. Warm up the engine and measure the no-load idling speed and governed max. speed.

NOTE
Adjust the engine speed if incorrect.

	Applicable truck model	No-load minimum rpm	No-load maximum rpm
H20PU240 (NISSAN)	FG30N7	650 rpm	2950-3080 rpm

2. Block the front and rear of the rear wheels, jack up the truck until the front wheels rotate freely and support the underside of the frame securely on a stand.

3. Remove **F** or **R** plug and **T** plug on the case cover, and install an oil pressure gauge.
Refer to Fig. 2-41 and Fig. 2-42.

4. The pressure gauges used for measuring oil pressure are as follows.
Clutch oil pressure:
Max. graduation 20 kg/cm^2
Torque converter oil pressure:
Max. graduation 10 kg/cm^2

5. The oil pressures of the torque converter and the clutch must be measured at the specified engine speed after running the engine for a few minutes.

P port is provided on the valve to measure the charging pump oil pressure before the oil enters the selector valve. This port can also be used to measure the clutch oil pressure when the gears are in neutral but if this is done head loss caused by clutch leakage cannot be distinguished.

6. The oil pressure must be checked when oil temperature is between 70°~90°C.

2.5.5. STALL TEST

1. Following items are checked in stall test
1) Torque converter operation
2) Engine output

2. Tools used
1) Engine tachometer
2) Chuck
3) Load nearly rated capacity

3. Stall test procedure
1) Warm the torque converter oil up to specified temperature.
2) Check governed engine rpm.
3) Pick up the load.
4) Place wheel stoppers under the drive wheels.

5) Set the parking brake, then depress the brake pedal as far as it will go.
6) Shift the change lever to F or R Position.
7) Depress the accelerator pedal as far as it will go. (Drive wheel should not rotate).
8) Measure the engine speed with the tachometer.

CAUTION

Do not stall for more than 30 seconds. If stalling is continued for a long time, the oil temperature will rapidly increase, resulting in damaged clutch or damaged seals.

4. Diagnosis
   If the measured engine speed exceeds that specified in the list below, judge as follows:
   1) When much higher than specified value .....**Transmission trouble**
   2) When much lower than specified value .....**Engine trouble**

	Stall speed
H20PU240	2170 rpm

DISASSEMBLY OF MAJOR GROUPS

(1) Remove inching valve from the transmission case.

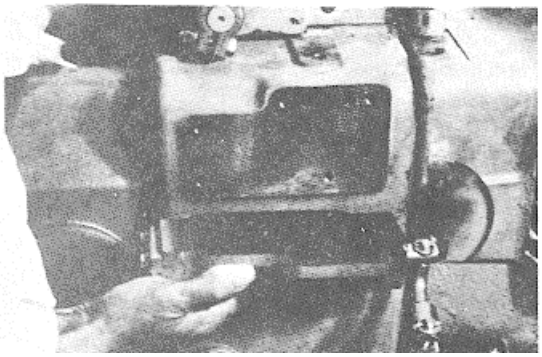


Fig. 4-232.

(2) Remove torque converter assembly.

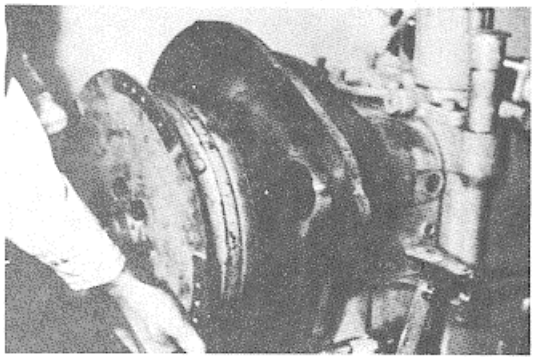


Fig. 4-233.

(3) Remove charging pump from torque converter housing.

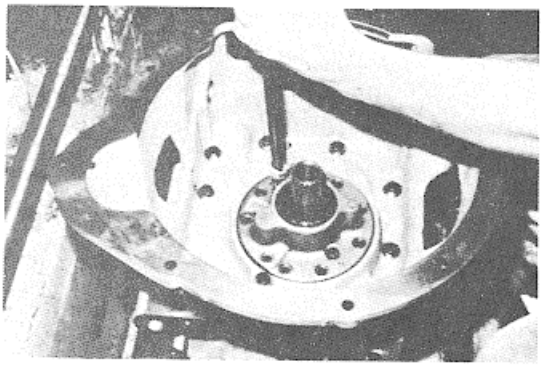


Fig. 4-234.

(4) Remove inline filter.

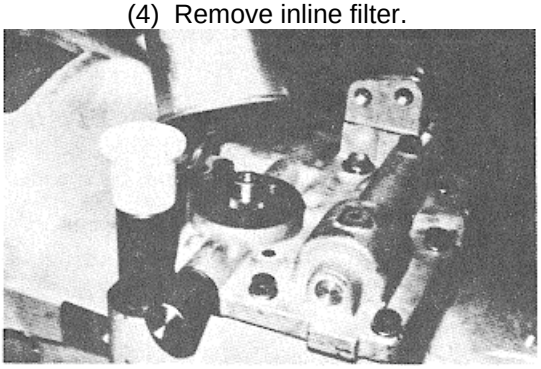


Fig. 4-235.

(5) Remove case cover joint bolt.

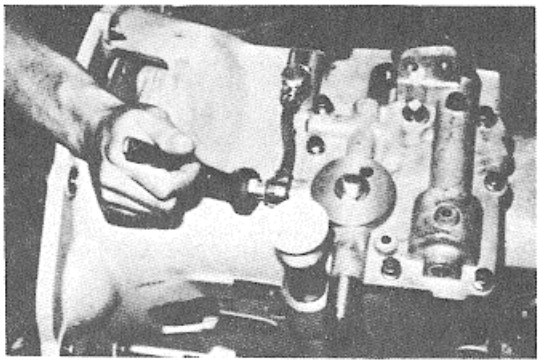


Fig. 4-236.

(6) Remove case cover fitting bolts and remove case cover

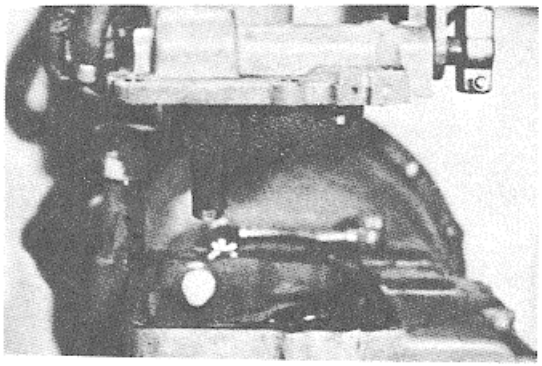


Fig. 4-237.

(7) Separate transmission case from torque converter housing.

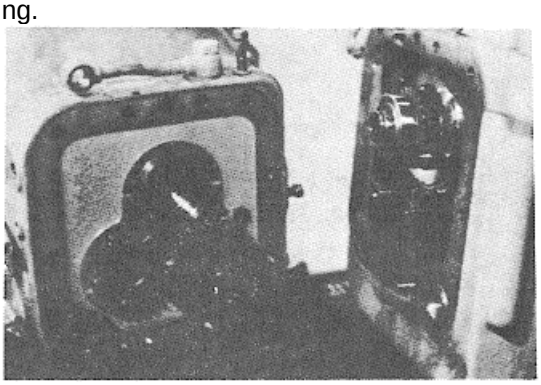


Fig. 4-238.

(8) Remove clutch packs.

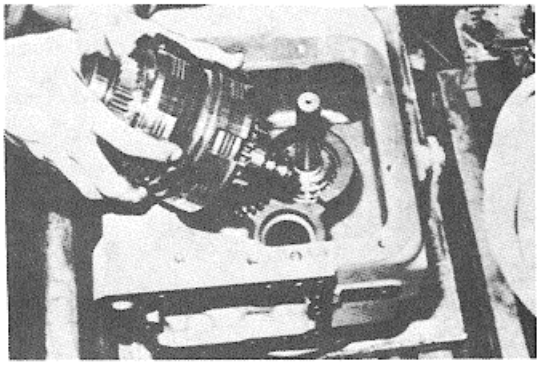


Fig. 4-239.

(9) Remove reverse idle gear.

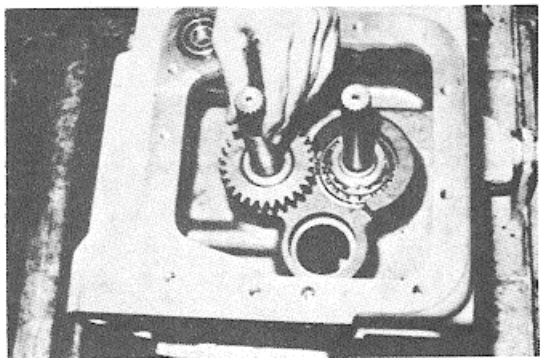


Fig. 4-240.

(10) Detach differential assembly cap bolt and remove cap.

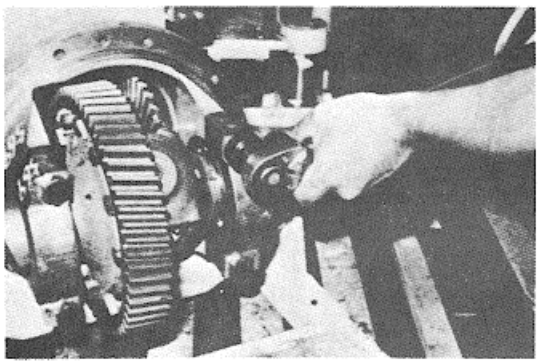


Fig. 4-241.

(11) Remove differential assembly.

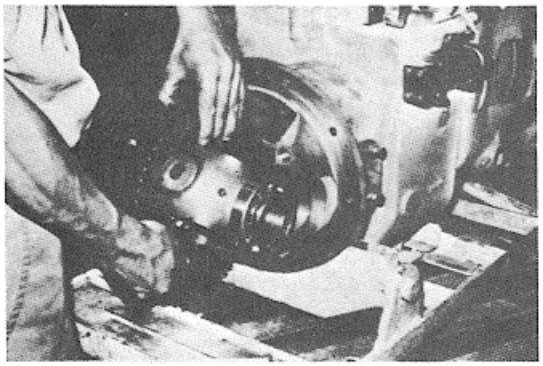


Fig. 4-242.

(12) Mark reduction gear shaft and bearing cap, and remove bearing cap at each side.

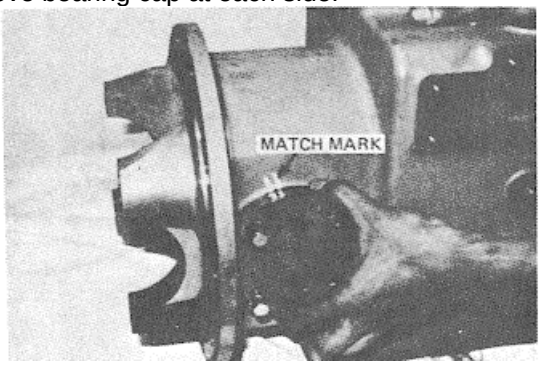


Fig. 4-243.

(13) Remove reduction gear shaft in the direction shown In Fig. 2-55.

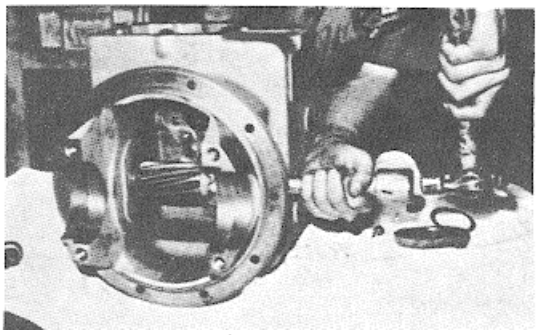


Fig. 4-244.

WARNING

Exercise .-are when removing snap rings.

(14) Remove snap ring from oil strainer and then oil strainer.

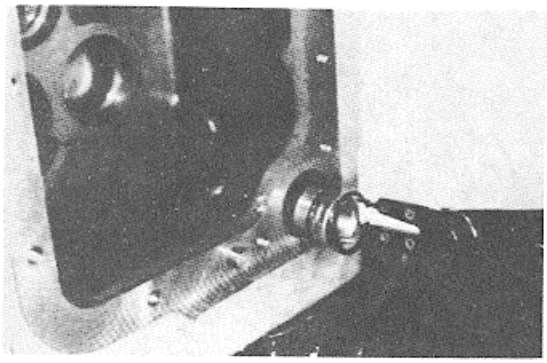


Fig. 4-245.

OUTPUT SHAFT DISASSEMBLY

(1) Straighten tangs of lock washer.

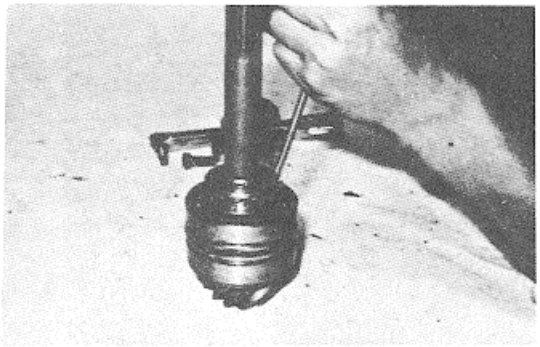


Fig. 4-246.

(15) Remove output shaft set plate.

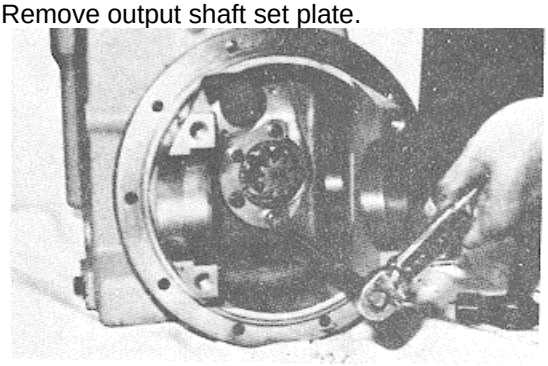


Fig. 4-247.

(16) Remove output shaft In the direction shown in Fig. 2-58.

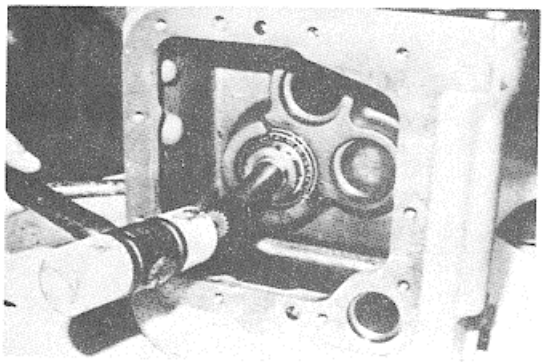


Fig. 4-248.

(2) Remove bearing nut.

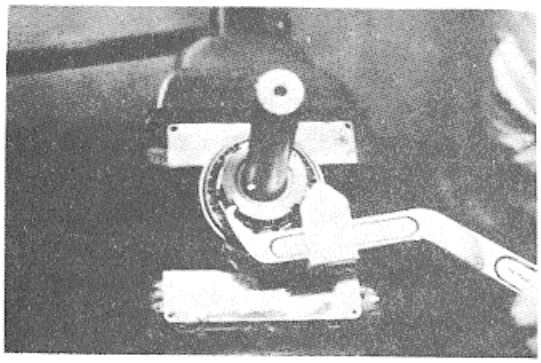


Fig. 4-249.

(3) Using a suitable press, remove tapered bearing and oil seal from output shaft.

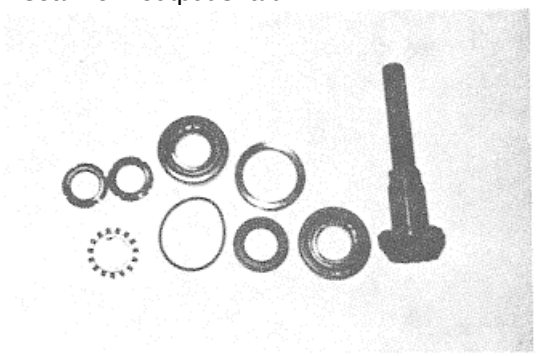


Fig. 4-250.

HYDRAULIC CLUTCH DISASSEMBLY

(1) Remove three seal rings from shaft.

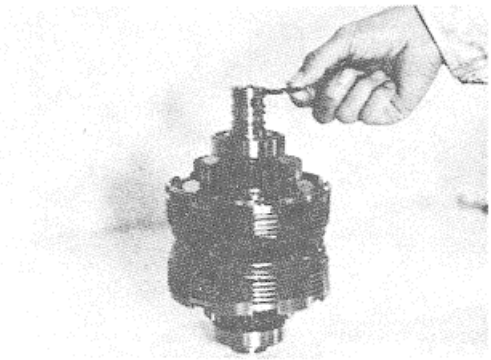


Fig. 4-251.

(2) Using a suitable puller, remove forward gear along with bearing.

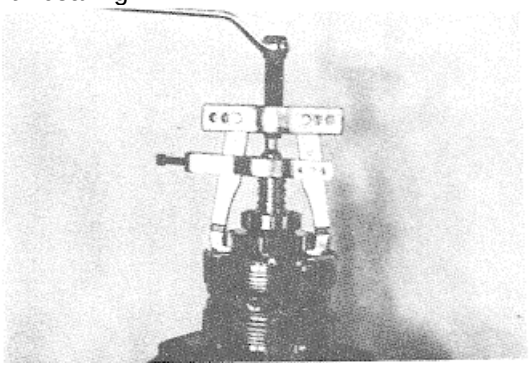


Fig. 4-252.

WARNING

Exercise care when removing snap rings.

(3) Remove snap ring.

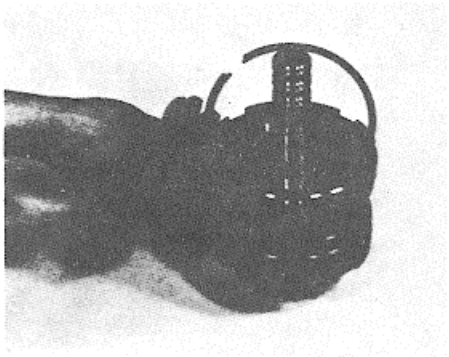


Fig. 4-253.

(4) Remove end plate and clutch disks. (On Model 424-25 and 426-25, conical plate is also to be removed.)

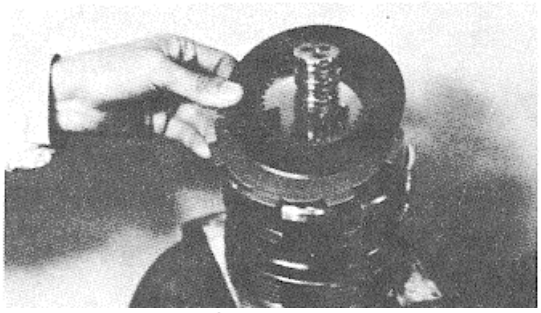


Fig. 4-254.

WARNING

Exercise care when removing snap rings.

(5) Remove snap ring securing spring.

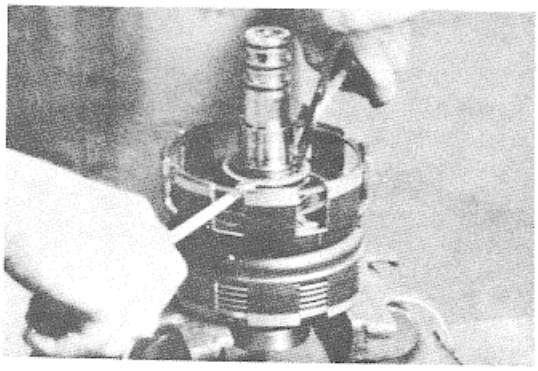


Fig. 4-255.

(6) Remove spring retainer and spring.

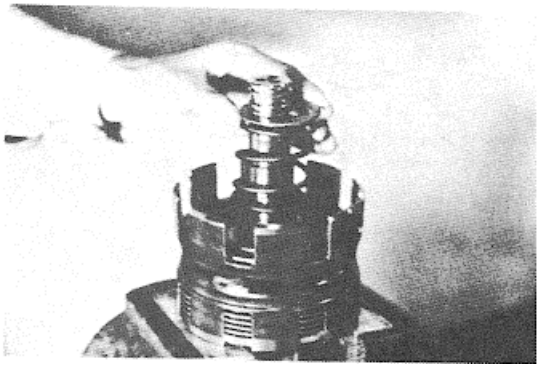


Fig. 4-256.

(7) Remove piston.

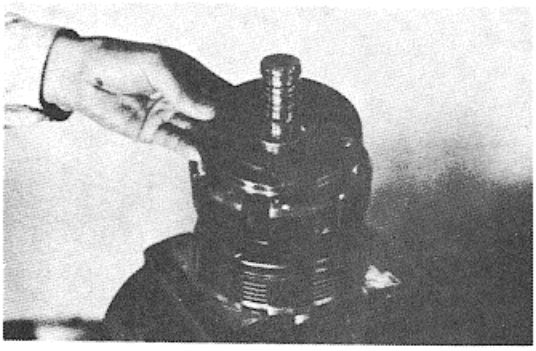


Fig. 4-258.

(8) Remove seal ring from shaft.

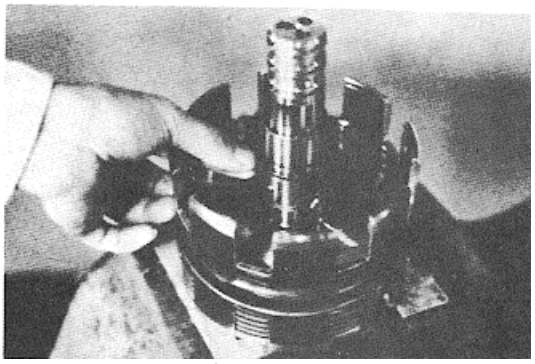


Fig. 4-259.

(9) Disassemble reverse side clutch, using the same procedure as with forward side one.

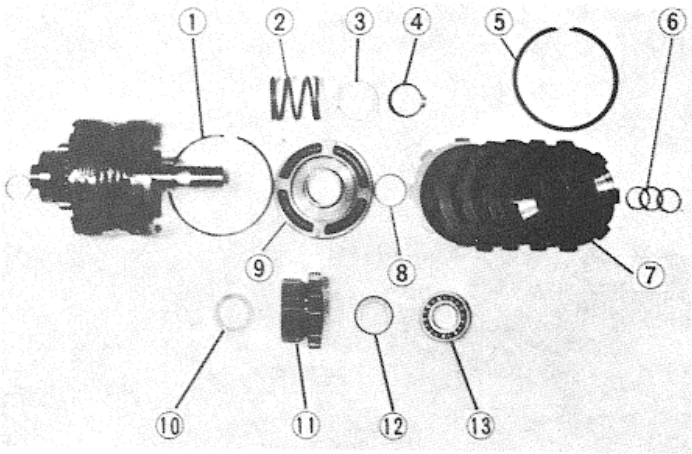


Fig. 4-257.

1. Piston seal ring for outer circumference
2. Spring
3. Spring retainer
4. snap ring
5. snap ring
6. Seal ring
7. Clutch disk
8. Piston seal ring for inner circumference
9. Piston
10. Thrust washer
11. Forward gear
12. Thrust washer
13. Ball bearing

CHARGING PUMP DISASSEMBLY

(1) Remove O-ring from the circumference of the case.

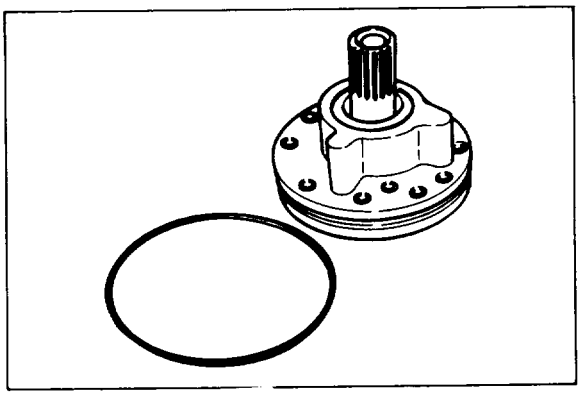


Fig. 4-260.

(2) Remove two assembling bolts.

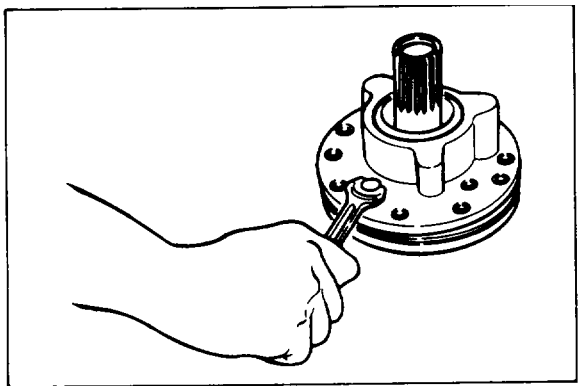


Fig. 4-261.

(3) Separate case from cover.

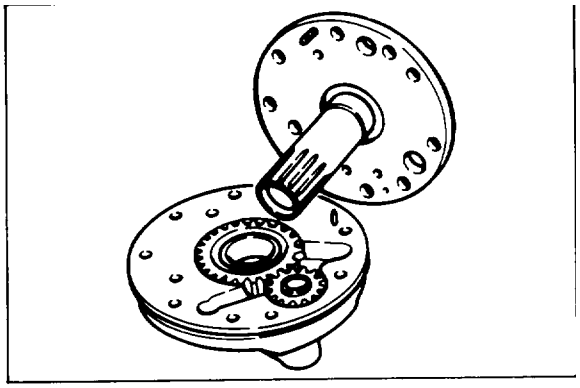


Fig. 4-263.

(4) Remove gears from case.

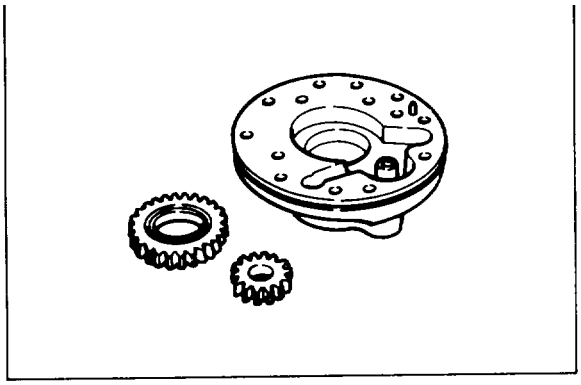


Fig. 4-264.

CONTROL VALVE DISASSEMBLY

(1) Remove detent plug.

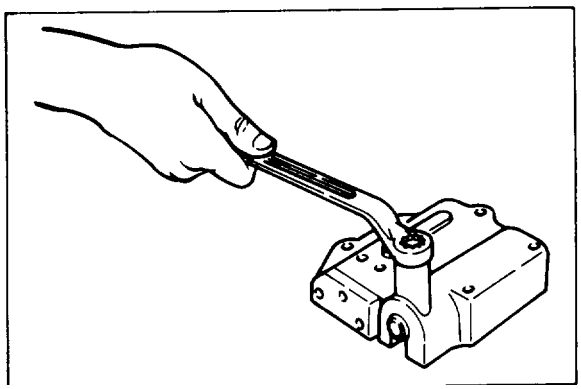


Fig. 4-262.

(2) Remove detent spring and steel ball.

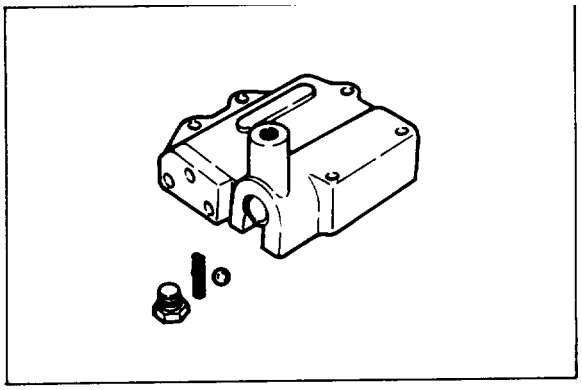


Fig. 4-265.

(3) Remove selector valve.

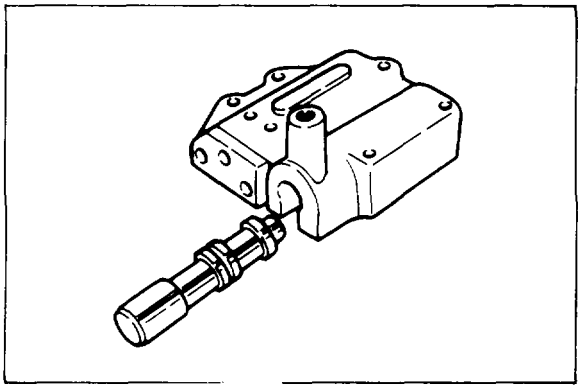


Fig. 4-266.

(4) Remove cover fitting bolts.

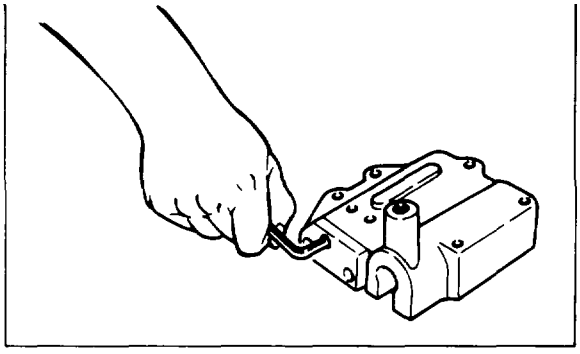


Fig. 4-267.

(5) Remove cover.

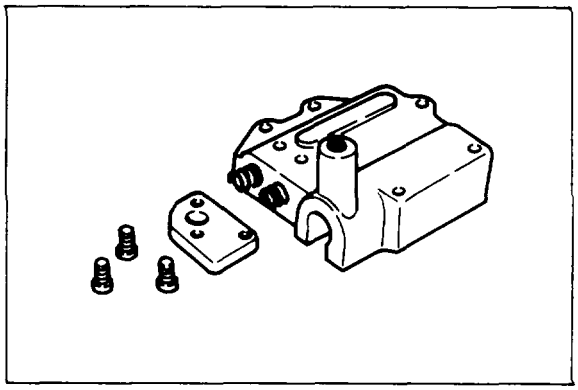


Fig. 4-269.

(6) Remove regulator valve, modulate valve and spring.

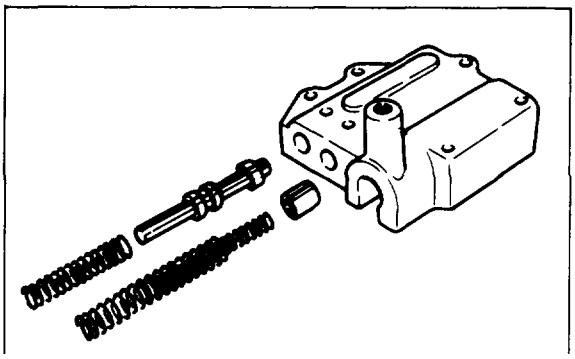


Fig. 4-270.

INCHING VALVE DISASSEMBLY

(1) Remove cover fitting bolts.

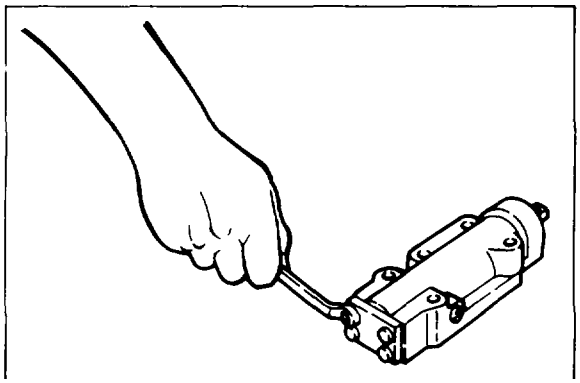


Fig. 4-268.

(2) Remove cover.

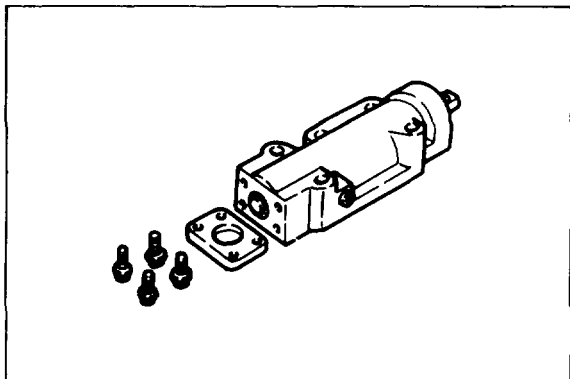


Fig. 4-271.

(3) Remove inching rod assembly.

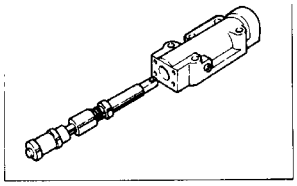


Fig. 4-272.

(4) Remove inching rod snap ring.

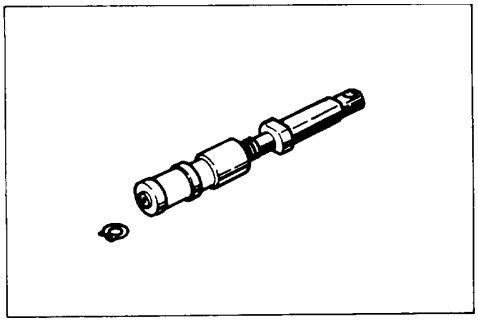


Fig. 4-273.

(5) Remove spool, piston and spring from inching rod.

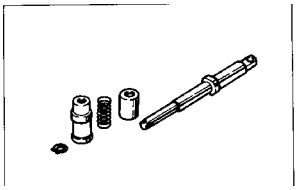


Fig. 4-274.

CASE COVER DISASSEMBLY

(1) Remove control valve assembly from case cover.

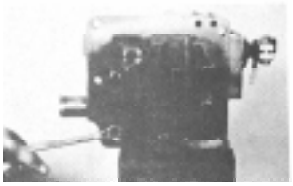


Fig. 4-275.

(2) Remove spring retainer from regulator valve.

Fig. 4-276.

(3) Remove regulator spring and piston. It is good practice to use a round bar whose end is threaded (M6-P1), as shown in Fig. 2-88 when removing piston.

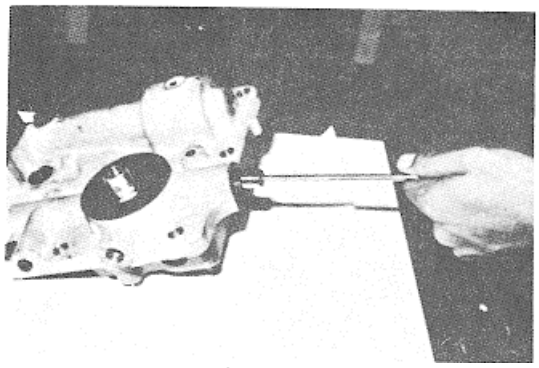


Fig. 4-277.

(4) Using a round bar of 5 mm (0.197 in) diameter, remove roll pin.

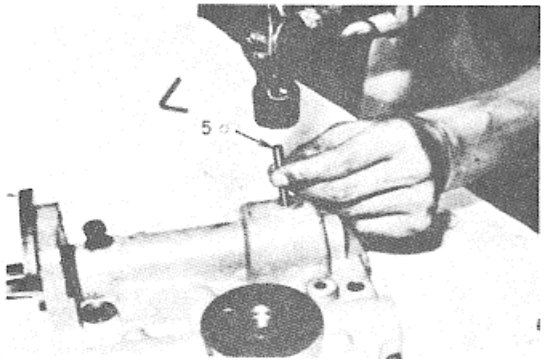


Fig. 4-278.

(5) Remove stopper.

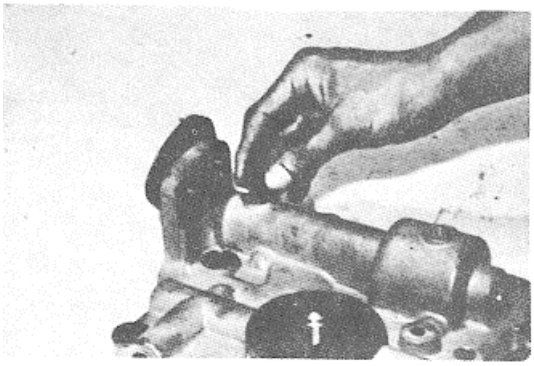


Fig. 4-279.

(6) Remove shift arm and shift rod.

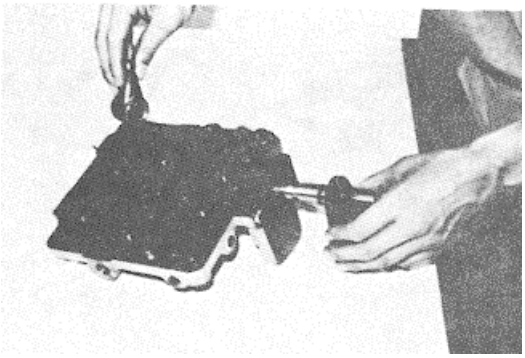


Fig. 4-280.

CLUTCH GROUP INSPECTION

(1) Inspect composite disks for thickness and flatness, and for deformation, damage, or wear. If unsatisfactory, replace with new ones.

Note 1 : When checking for flatness, put composite disk on a surface table and measure the clearance between clutch disk and surface table.

Note 2 : When checking for thickness, measure at inner, middle and outer sections of composite disk mating with steel disk.

Checking Item	Standard Value	Unit: mm(in) Service Limit
Composite disk thickness	25-2.7 2 5-2.7	2.1 2 1
Flatness and parallelism of clutch disk	(0.0984-0 106) Below 0.05 (0.002)	(0.083) Over 0.05 (0.002)

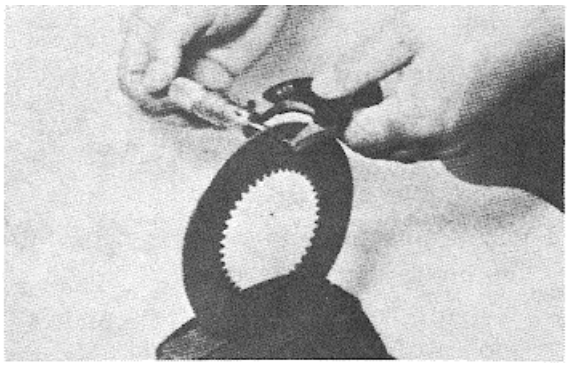


Fig. 4-281. Measuring Clutch Disk Thickness

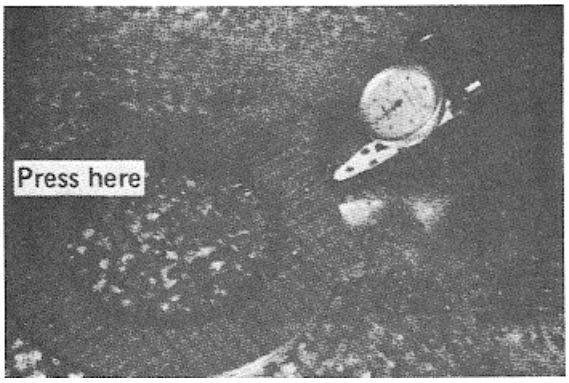


Fig.4-282.

(2) Install composite disk onto drive gear, and check for clearance in rotational direction at splines. If unsatisfactory, replace.

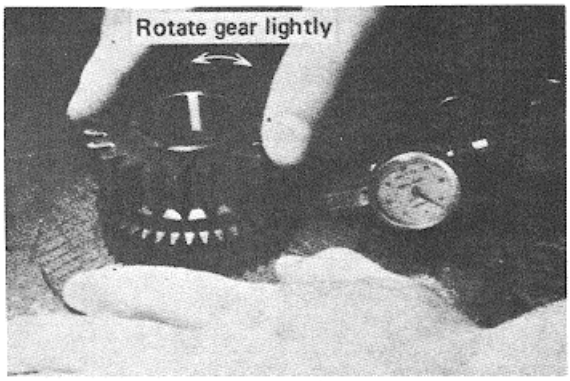


Fig. 4-283.

Checking Item	Standard Value	Unit: mm(in) Service Limit
Clearance between drive gear and clutch disk splines in rotational direction	0.09-0.25 0035-0.01	

(3) Check clutch steel disks for thickness and flatness, and for deformation, damage or wear. If unsatisfactory, replace with new ones.

Note 1 : When checking for flatness, put steel disk on a surface table and measure clearance between steel disk and surface table.

Note 2 : When checking for thickness, measure at inner, middle and outer sections of steel disk mating with composite disk.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Clutch steel disk thickness	(1.58-1.67 (0.062-0 066)	155 (0.061)
Flatness and parallelism of steel disk	Below 0.05 (0.002)	Over 0.05 (0.002)

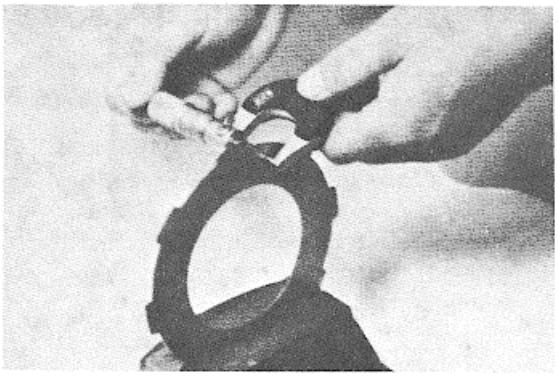


Fig. 4-284. Measuring Clutch Steel Disk Thickness

(4) Check pressure plates for thickness and flatness, and for damage or wear. If unsatisfactory, replace.

Note: When checking for flatness, put pressure plate on a surface table, and measure clearance between pressure plate and surface table.

(5) Check inner and outer diameters of clutch piston, and also its undercut width for seal ring. If damage or wear is found, replace.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Clutch piston inner dia.	40 2-40 25 (15831 585	--
Clutch piston outer dia.	121.75 -121 80 (4.793_ 4795)	--
Clutch piston undercut width	2.51-2.62 (0.099-0.103)	2.92 (0.115)

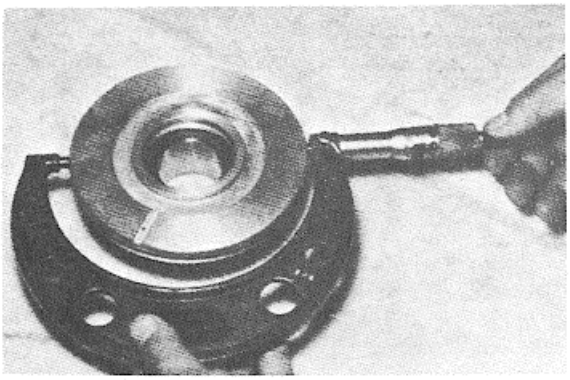


Fig. 4-285. Checking Clutch Piston

(6) Check the clutch return spring for deterioration and signs of overheating. If unsatisfactory, replace.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Clutch return spring Free length	54.8 mm (2.16)	
Setting length	24.8 mm (.98)	
Setting load, kg (lbs)	65 kg (143.3 lbs.)	

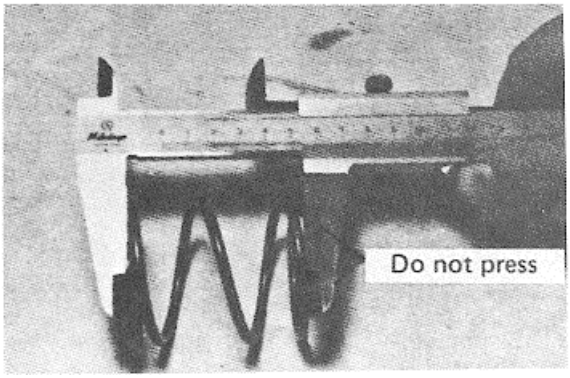


Fig. 4-286. Checking Return Spring

(7) Measure the thickness of thrust washers. If measurement is out of standard value, replace.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Thrust washer thickness (between gear and shaft)	2.9-3.0 (0.114-0.118)	--
Thrust washer thickness (between gear and bearing)	3.4-3.5 (0.134-0.138)	--

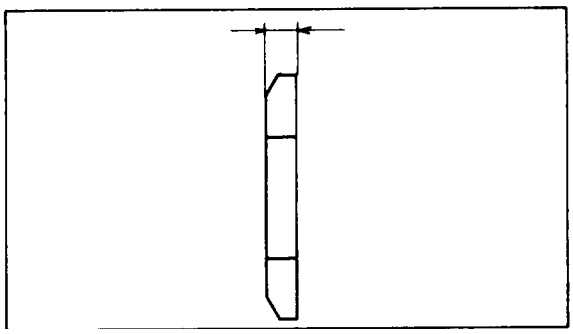


Fig. 4-287.

(8) Measure inner diameter of bushings fitted to gears, and if unsatisfactory, replace.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Inner dia. of bushing	35.025-35.050 (1.379-1.380)	--

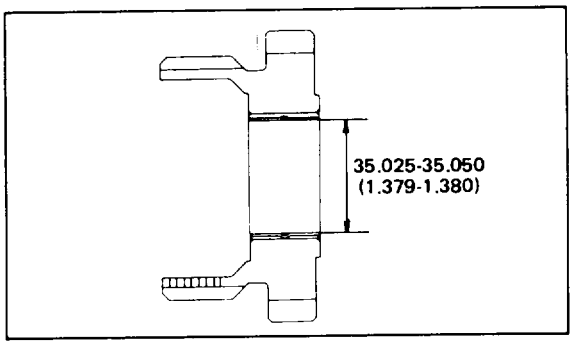


Fig. 4-288.

(9) Measure dimensions of each seal ring, and replace, if unsatisfactory.

Unit: mm(in)

Checking Item	Outer dia.	Inner dia.	Thickness
Outer circumference of piston	122 (4.8)	2.5 (0.098)	3.2 (0.126)
Inner circumference of piston	40.2 (1.583)	2.98 (0.117)	1.7 (0.067)
Shaft seal F (1.189)	30.2 (0.098)	2.5 (0.051)	1.3
Shaft seal R	30.2 (1.189)	(2.46 (0.097)	1.6 (0.063)

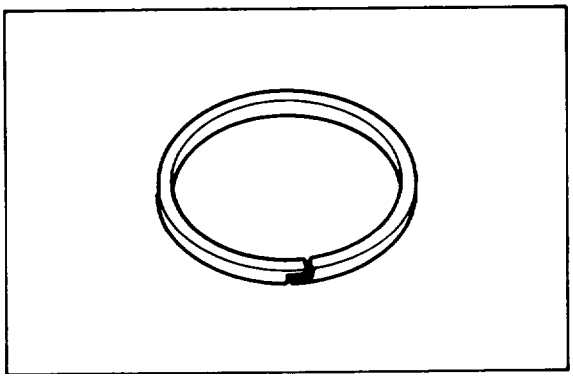


Fig. 4-289.

(10) Measure inner diameter of clutch drum, and replace, if unsatisfactory.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Clutch drum inner diameter	122.00-122.05 (4.803-4.805)	--

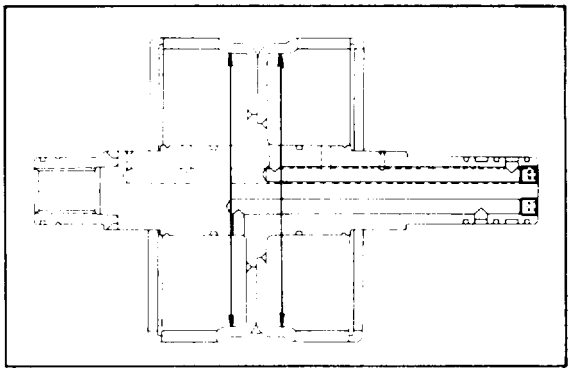


Fig. 4-290.

(11) Using a thickness gauge, measure clearance between back plate and snap ring. If unsatisfactory, replace back plate or clutch disk.

Unit: mm(in)

Checking Item		Standard Value	Service Limit
Clearance between back plate and snap ring	306-25	1.0-1.6 (0.04-0.063)	

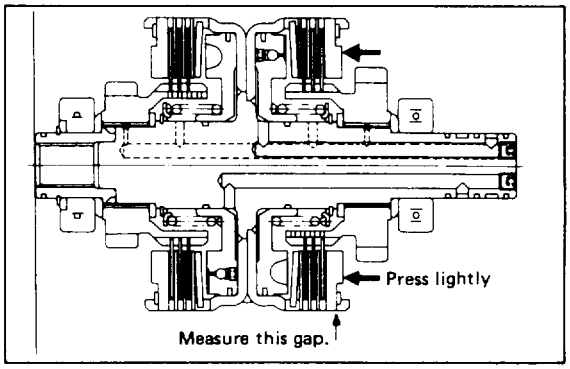


Fig. 4-291.

CHARGING PUMP INSPECTION

(1) Measure inner diameter of bushing inside casing. If unsatisfactory, replace bushing.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Inner dia of bushing inside casing	50076-50 101 (1.971-1.972)	

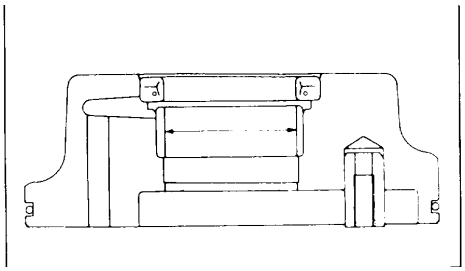


Fig. 4-292.

(2) Measure inner diameter of bushing of drive gear. If unsatisfactory, replace bushing.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Inner dia of bushing of drive gear	36.000-36.025 (1.417-1.418)	

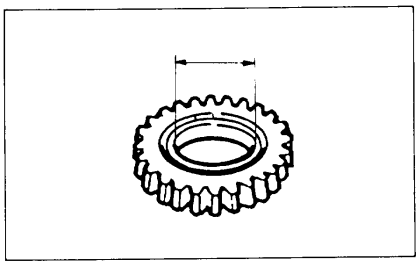


Fig. 4-293.

(3) Measure inner diameter of driven gear. If unsatisfactory, replace driven gear.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Driven gear inner diameter	19 006-19.017 (0 748-0 749)	--

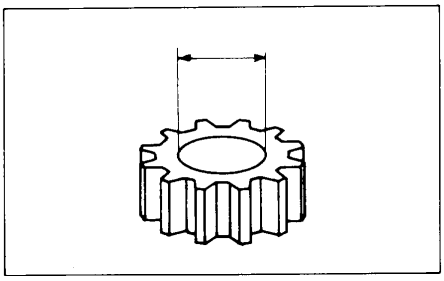


Fig. 4-294.

(4) Measure outer diameter of drive gear rotating part on stator support, and replace stator support, If unsatisfactory.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Drive gear rotating part outer diameter on stator support.	35.95-35.97 (1.415-1.416)	--

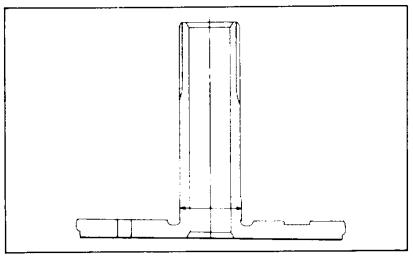


Fig. 4-295.

(5) Measure outer diameter of spool 200 mm (7.9 in) long, and replace, if worn.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
50 mm (1.97 in) long spool section 10.966-10.984	9.972-9.987 (0.3926-0.393)	--
Piston fitting part	(0.4317-0.4320)	--
Section sliding in valve body	21.959-21.980 (0.8645-0.865)	--
Oil seal sliding part	15.957-16.000 (0.628-0.630)	--

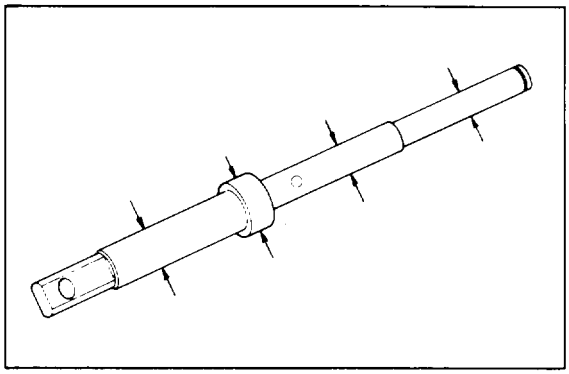


Fig. 4-296.

(6) Check piston spring for the following items, and if unsatisfactory, replace spring.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Free length	36.1 (1.42)	--
Setting length	24 (0.945)	--
Setting load: kg (lbs)	5.7 (12.6)	5.13 (11.3)

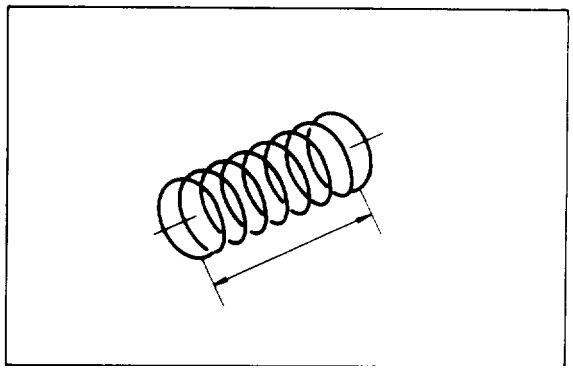


Fig. 4-297.

INCHING VALVE INSPECTION

(1) Measure inner and outer diameters of valve body. If the difference exceeds service limit, replace piston or valve body.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Difference between valve body and piston		0.1 (0.004)

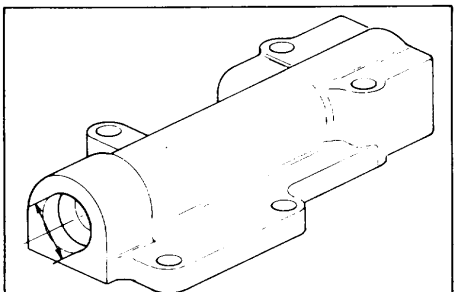


Fig. 4-298.

(2) Measure inner diameter of valve body, and replace valve body if unsatisfactory.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Valve body inner diameter	22.000-22.021 (0.866-0.867)	--

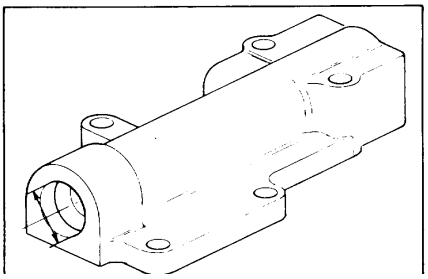


Fig. 4-299.

(3) Measure outer diameter of spool 50 mm (1.97 in) long. If worn, replace spool.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Outer dia. of spool 50 mm (1.97 in) long.	21.959-21.980 (0.8645-0.8650)	--

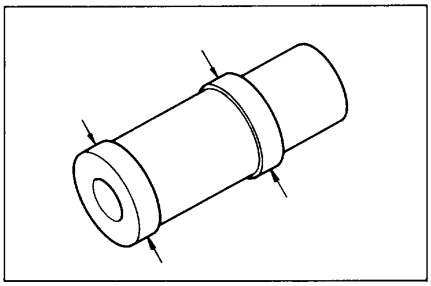


Fig. 4-300.

(4) Measure outer diameter of piston, and replace, if worn.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Outer diameter of piston	21.959-21.980 (0.8645-0.8650)	

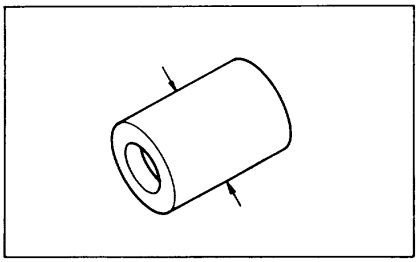


Fig. 4-301.

CONTROL VALVE INSPECTION

(1) Measure inner diameter of change spool sliding part of valve body.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Change spool sliding part	25.000-25.021 (0.984-0.985)	--

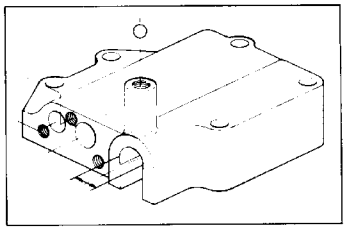


Fig. 4-302.

(2) Measure inner diameter of piston sliding part of valve body.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Piston sliding part	18.000-18.018 (0.7090-0.7093)	--

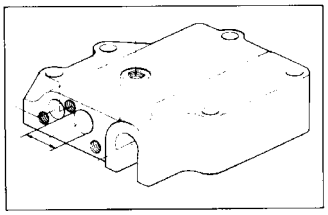


Fig. 4-303.

(3) Measure inner diameter of spool fitting part of valve body, replace, if worn.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Spool fitting part	16.000-16.018 (0.629-0.631)	--

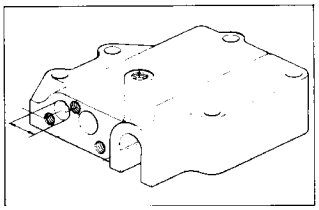


Fig. 4-304.

(4) Measure outer diameter of change spool, and replace, if worn.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Change spool outer diameter	24.959-24.980 (0.9826-0.9834)	--

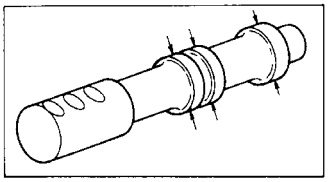


Fig. 4-305.

(5) Measure outer diameter of piston, and replace, if worn.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Piston outer diameter	17.959-17.980 (0.707-0.708)	--

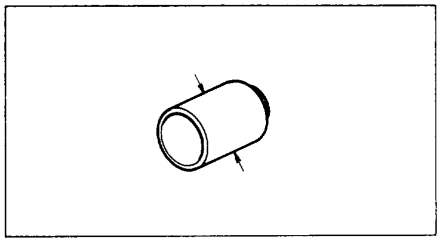


Fig. 4-306.

(6) Measure outer diameter of spool, and replace, if worn.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Outer diameter of spool	15.959-15 980 (0.6283-0.6291)	--

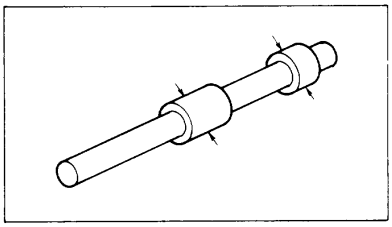


Fig. 4-307.

(7) Check difference between outer diameter of each piston and spool and inner diameter of their corresponding valve body holes. If unsatisfactory, replace piston, spool or valve body, as needed.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Clearance between valve body and each spool		0.1 (0.004)

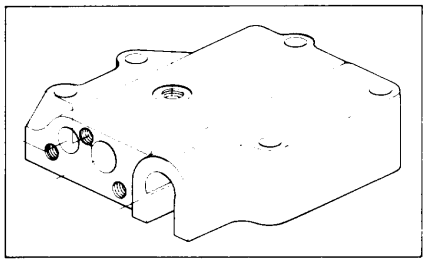


Fig. 4-308.

(8) Measure regulator spring for the following items. If unsatisfactory, replace spring.

Unit: mm (in)

Checking Item	Inner Spring	Outer Spring
Free length	118.8 (4.677)	101.5 (3.996)
Setting length	108 (4.252)	91 (3.583)
Setting load kg (lbs)/mm (in)	11.9/90 (26.2/3.543) 10.7/90 (23.6/3.543)	9/56 (19.9/2.205) 8.1/56 (17.9/2.205)

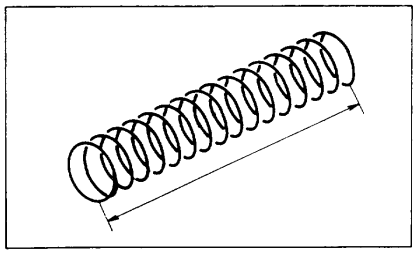


Fig. 4-309.

SHAFT INSPECTION

(1) Check bushing sliding surface on clutch shaft for wear or damage. If unsatisfactory, replace clutch shaft.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
O.D. of bushing sliding part on clutch shaft	34 989-35.000 (1.376-1.378)	-- --

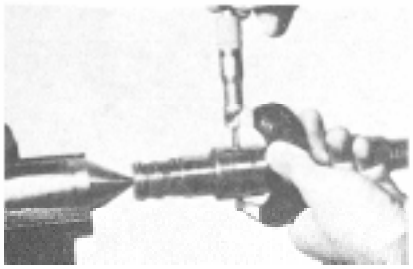


Fig. 4-310. Checking Clutch Shaft Sliding Surface

(2) Check idle shaft for deflection with a dial gauge. If excessive deflection is found, replace shaft.

Note : Set a suitable dial gauge at midway of shaft, and read gauge, rotating shaft slowly.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Deflection of idle gear shaft	Below 0.05 0.002	Over 0 1 0.004

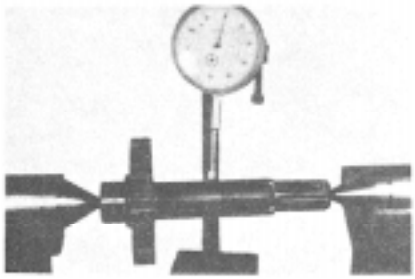


Fig. 4-311. Checking Idle Gear Shaft Deflection

(3) Check oil seal sliding part on output shaft for wear or damage. If unsatisfactory, replace shaft.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Outer diameter of oil seal - sliding part on output shaft	40.002-40 018 (1.5749-1.5755)	--

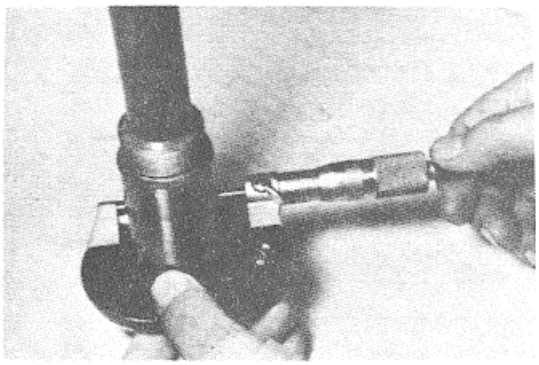


Fig. 4-312.

(4) Check output shaft splines for wear or damage. If any defect is found, replace shaft.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Clearance between output shaft and output gear spines in rotational direction.	0.008-0.076 (0.0003-0.003)	

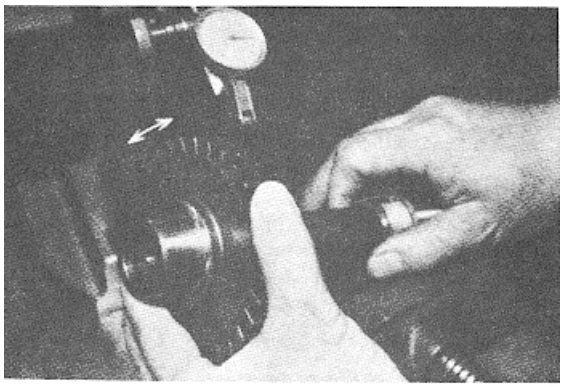


Fig. 4-313.

(5) Using a suitable dial gauge, check output shaft for deflection. If excessively deflected, shaft should be replaced.

Note : Set a suitable dial gauge at midway of shaft and read gauge, rotating shaft slowly.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Output shaft deflection	Below 0.05 (0.002)	Over 0.05 (0.002)

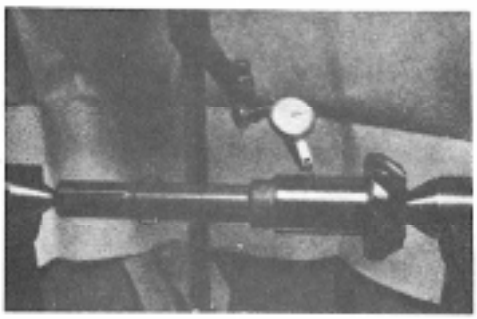


Fig. 4-314. Checking Output Shaft Deflection

(6) Check idle gear shaft splines for wear or damage. If unsatisfactory, replace shaft.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Clearance between idle gear shaft and reverse idle gear splines in rotational direction	0.1-0.2 (0.004-0.008)	--

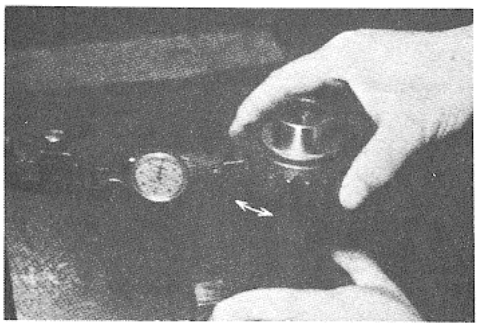


Fig. 4-315.

GEAR AND BEARING INSPECTION

(1) To know how much a gear is worn, measure the displacement over a given number of teeth of the gear. If the measured value is beyond the useful limit, the gear should be replaced with a new one. Damaged gears, If slightly, may be repaired by an oil stone or pencil grinder.

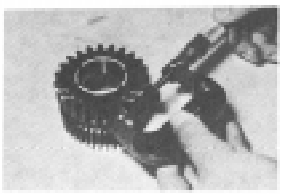


Fig. 4-316. Checking Displacement over a Given Number of Teeth of a Gear.

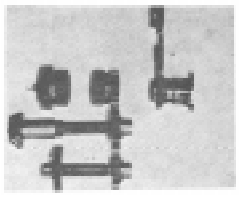


Fig. 4-317. Gears To Be Inspected

Unit: mm (in)

Checking Item	Standard Value	Service Limit
Displacement over four (4) teeth of drive gear	32.429-32.526 (1.2767-1.2806)	32. 279 (1.2708)
Displacement over four (4) teeth of counter drive gear	26.909-26.993 (1.0594-1.0627)	26.759 (1 0535)
Displacement over four(4) teeth of output gear	32.488-32.578 (1.2791-1.2826)	32 338 (1.2731)
Displacement over four(4) teeth of reverse idle gear	32.429-32.526 (1.2767-1.2805)	32.279 (1.2708)
Displacement over four (4) teeth of idle gear shaft	26.909-26.993 (1.0594-1.0627)	26.759 (1.0535)

(2) Measure inner diameters of drive gear and counter drive gear, and if each measurement is beyond service limit, replace gears.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Inner diameter of drive gear	37.009-37.025 (1.457-1.458)	37.050 (1.459)
Inner diameter of counter drive gear	43.009-43.025 (1.6933-1.6939)	43.050 (1.6949)

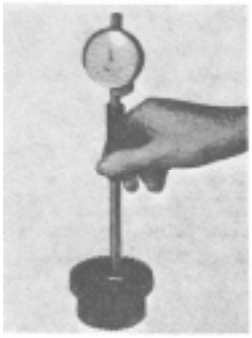


Fig. 4-318. Measuring Inner Diameter of Gears

(3) Install gears onto respective shafts and measure clearance between splines of them in rotational direction. If splines are excessively worn, replace gear.

Note : When making checks, gears should be installed in position on each shaft. If gears are not installed correctly, a wrong measurement will be obtained.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Clearance between output shaft and output gear spline in rotational direction	0 1-0 2 (0.004-0.008)	--
Clearance between idle gear shaft and reverse idle gear in rotational direction	0.1-0.2 (0.004-0.008)	--
Clearance between pump drive gear and pump wheel boss splines in rotational direction	0.073-0.156 (0.003-0.006) , I	--

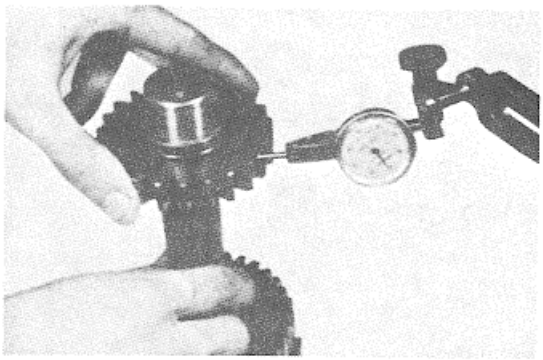


Fig. 4-319. Checking Gear Splines

CASE COVER INSPECTION

(1) Check switch plate of direction change rod for wear, and if unsatisfactory, replace.

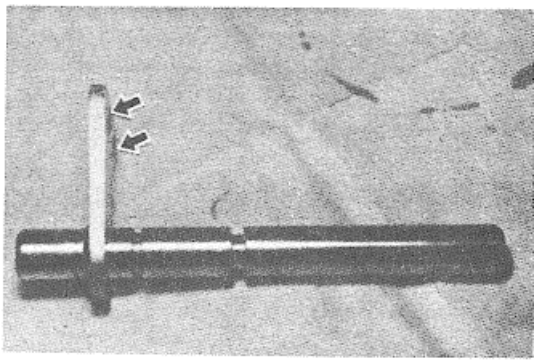


Fig. 4-320.

(2) Measure valve control lever end diameter, and check for wear or damage. If any defect is found, replace.

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Valve control lever end diameter	13.8-14.0 (0.543-0.55)	--

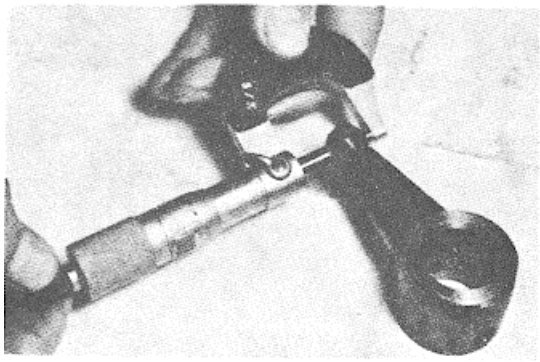


Fig. 4-321. Measuring Valve Control Lever End Diameter

REASSEMBLY OF TORQUE CONVERTER HOUSING

(1) Install O-ring on bearing cage.

Fig. 4-322.

(2) Install bearing cage in torque converter housing. Do not forget to install the steel ball between bearing cage and torque converter housing.

Fig. 4-323.

(3) Install ball bearing on reverse idle gear.

Fig. 4-324.

(4) Fit snap ring on reverse idle gear.

Fig. 4-325.

(5) Install reverse idle gear in torque converter housing.

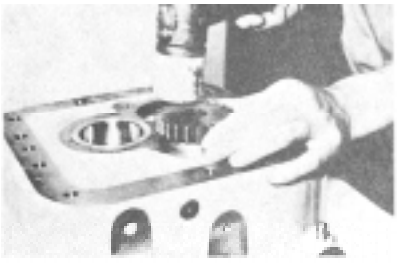


Fig. 4-326.

(6) Install ball bearing on output gear.

Fig. 4-327.

(7) Install snap ring on output gear.

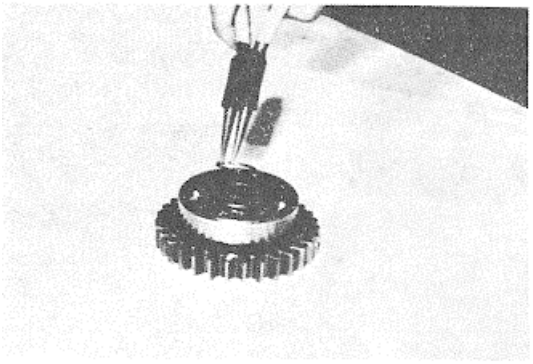


Fig. 4-328.

(8) Install output gear In torque converter housing.

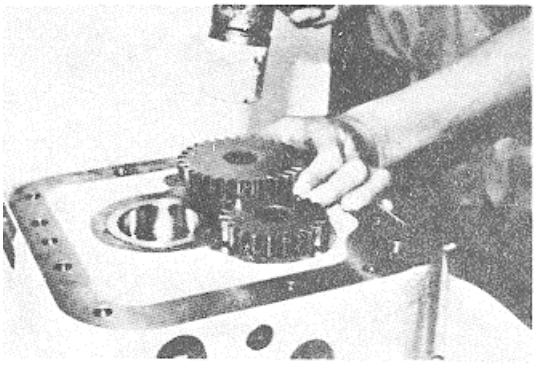


Fig. 4-329.

REASSEMBLY OF OUTPUT SHAFT

(1) Install tapered roller bearing on output shaft.

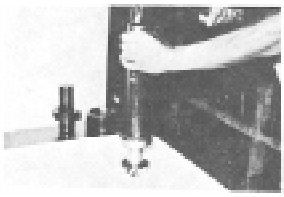


Fig. 4-330.

(2) Install oil seal on oil seal retainer.

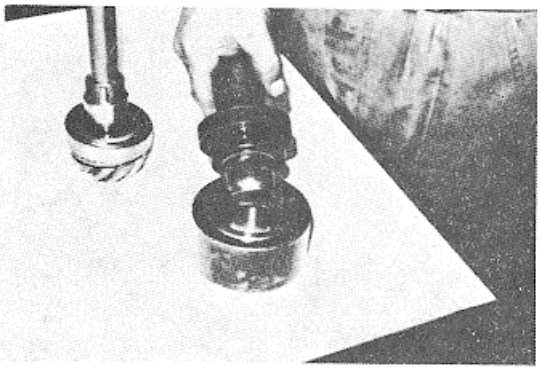


Fig. 4-331.

(3) Install O-ring on oil seal retainer and then install this oil seal retainer on output shaft.

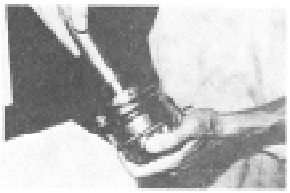


Fig. 4-332.

(4) Install tapered roller bearing on output shaft.

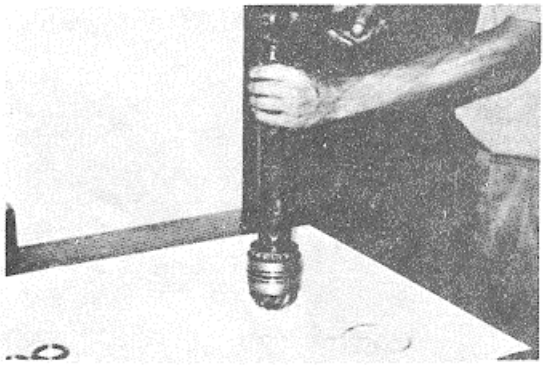


Fig. 4-333.

(5) Tighten bearing nut.

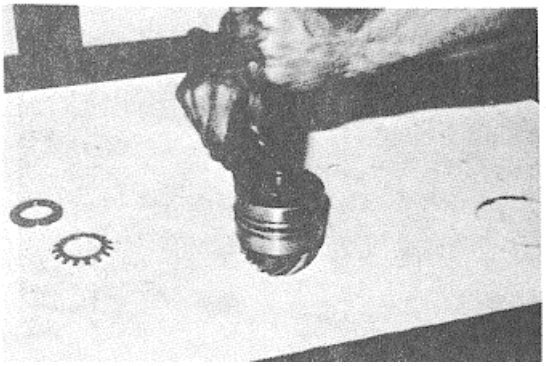


Fig. 4-334.

(6) Measure preload of output shaft. If reading of gauge is out of standard value, adjust with the bearing nut mentioned in Step (5) above. Preload: 8 to 10 kg-cm (0.58-0.723 ft-lbs)

Fig. 4-335.

(7) Put in lock washer and tighten with lock nut.

Tightening torque: 150 ± 50 kg-cm (10.9+3.6 ft-lbs)

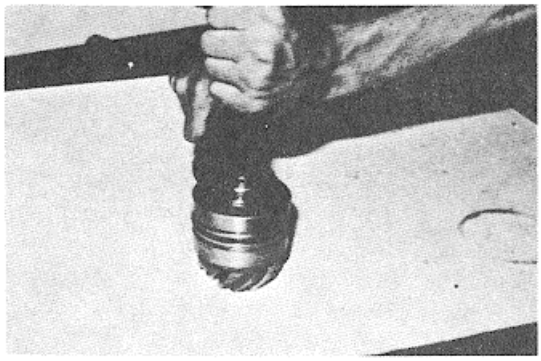


Fig. 4-336.

(8) Bend tangs of lock washer.

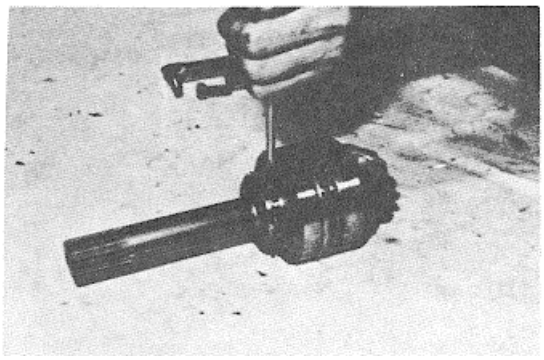


Fig. 4-337.

REASSEMBLY OF CASE COVER

(1) Drive roll pin into shift lever 2 or 3 mm (0.08 or 0.12 in).

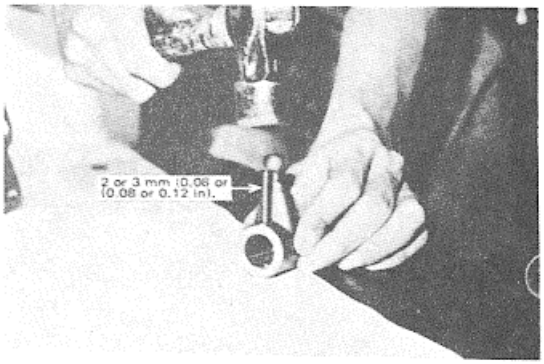


Fig. 4-338.

(2) Put shift rod in case cover and install shift lever on shift rod.

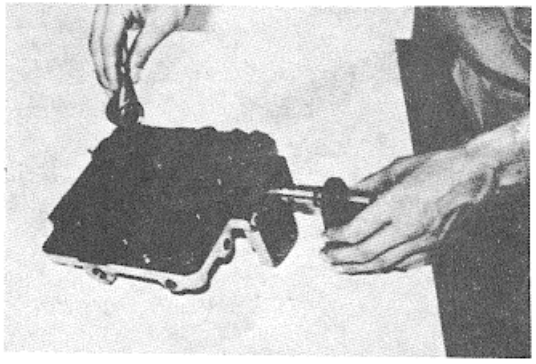


Fig. 4-339.

(3) Align shift rod hole with shift lever hole, and drive in roll pin completely.

Fig. 4-340.

(4) Install plug.

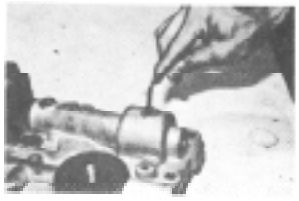


Fig. 4-341.

(5) Install shift rod set bolt.

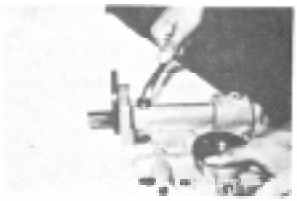


Fig. 4-342.

(6) Install regulator piston.

Fig. 4-343.

(7) Install regulator spring.

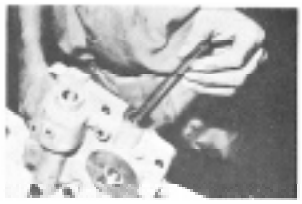


Fig. 4-344.

(8) Install spring retainer.

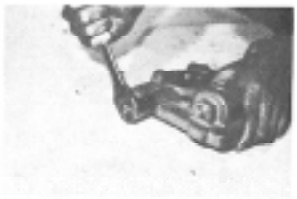


Fig. 4-345.

(9) Install packing on control valve, and put it on case cover.

Fig. 4-346.

(10) Tighten with fitting bolts.

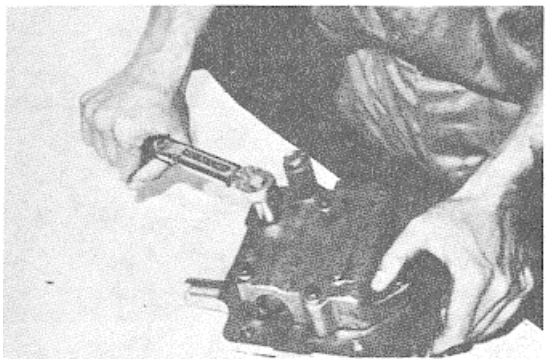


Fig. 4-347.

(11) Install oil filter adapter.

Fig. 4-348.

REASSEMBLY OF HYDRAULIC CLUTCH

(1) Install piston seal ring for inner circumference on forward side clutch shaft.

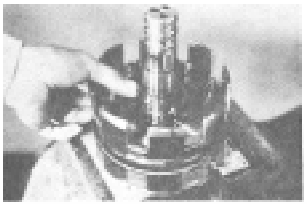


Fig. 4 - 349.

(2) Install seal ring on outer circumference of piston.

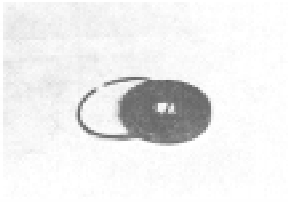


Fig. 4-350.

(3) Install piston on shaft, with its flat side pointing toward drum.

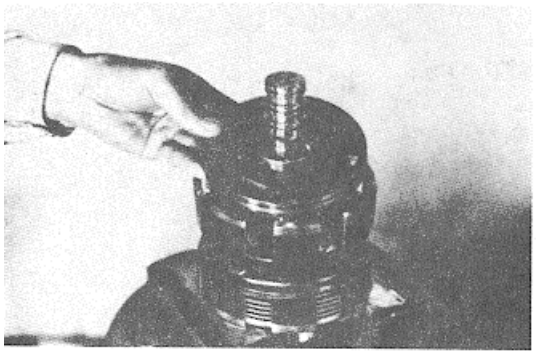


Fig. 4-351.

WARNING:
Exercise care when removing snap rings.

(4) Install spring, spring retainer and snap ring in that order.

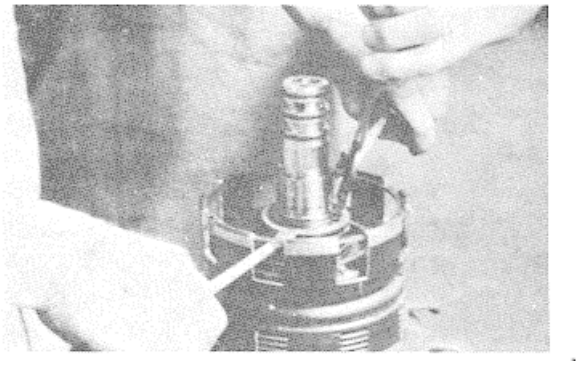


Fig. 4-352.

(5) Install a steel plate then a clutch disc then a steel plate until there are (4) four of each. Then install the back plate and finally the snap ring.

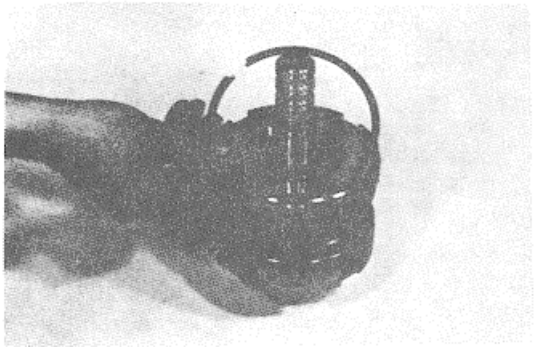


Fig. 4-353.

(6) Install thrust washer and forward gear, matching with clutch disk inner teeth. (When installing thrust washer, point chamfered part of its inner periphery toward spring.

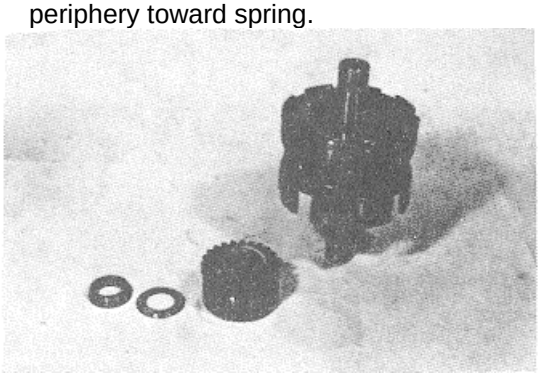


Fig. 4-354.

(7) Put thrust washer and install bearing. (When installing thrust washer, its outer periphery chamfered part should be pointed toward bearing.) Then install snap ring.

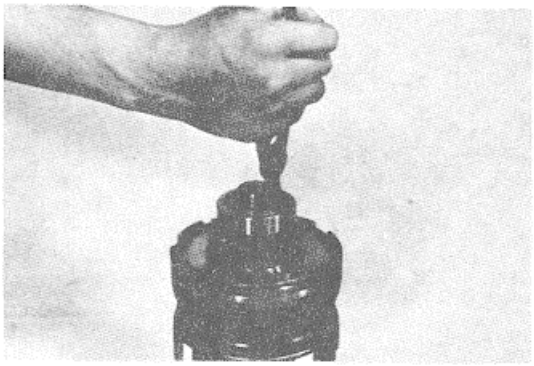


Fig. 4-355.

(8) Install 3 seal ring.

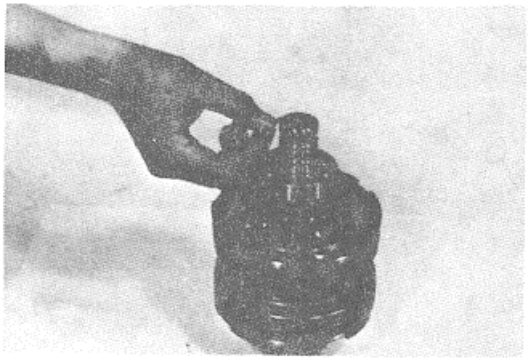


Fig. 4-356.

(1) Put shims of 0.8 (0.03 In) in transmission case.

Fig. 4-357.

(2) Spread output shaft assembly O-ring with gear oil, and install it in transmission.

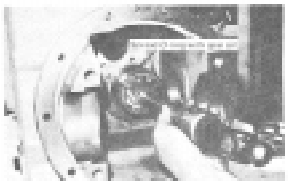


Fig. 4-358.

(3) Install collar.

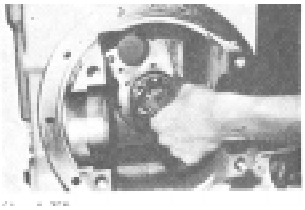


Fig. 4-359.

(4) Match shim with support plate.

Fig. 4-360.

(5) Tighten support plate fitting bolts.

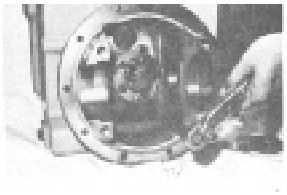


Fig. 4-361.

(6) Install tapered roller bearing on reductior gear shaft.

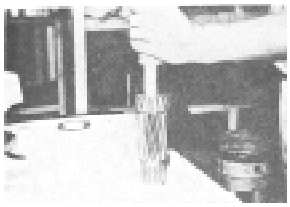


Fig. 4-362.

(7) Insert reduction gear shaft as shown in Fig. 2-175, and install collar and spiral bevel gear.

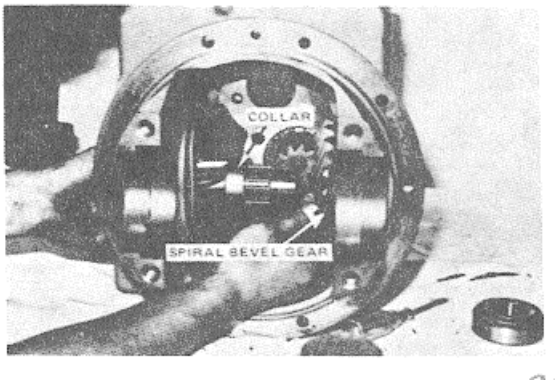


Fig. 4-363.

(8) Install tapered roller bearing cup as shown in Fig. 2-176.

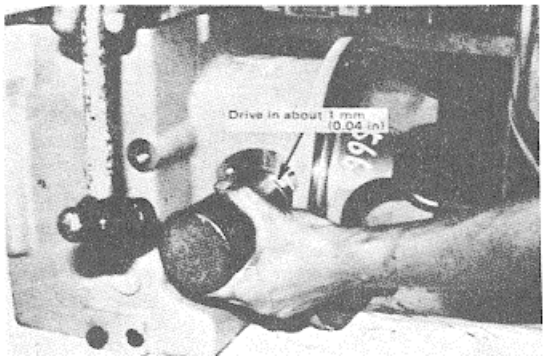


Fig. 4 -364.

(9) Install shim (0.5 mm or 0.02 in) as shown in Fig. 2-177.

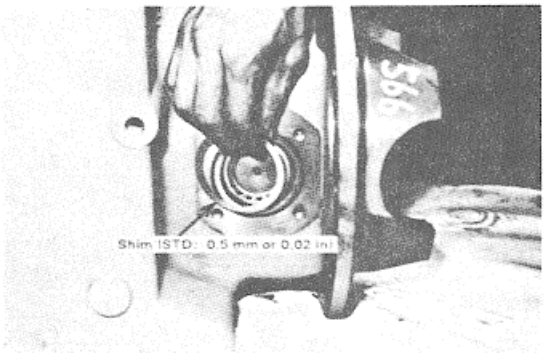


Fig. 4-365.

(10) Install O-ring on cap.

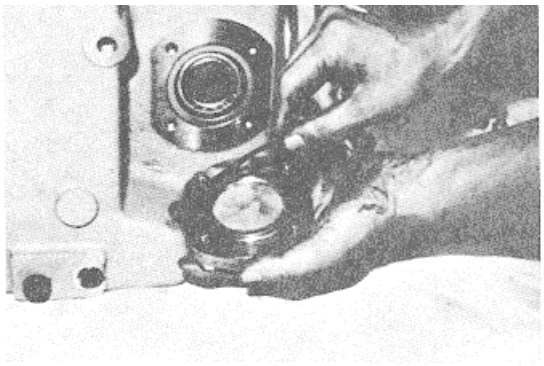


Fig. 4-366.

(11) Install cap.

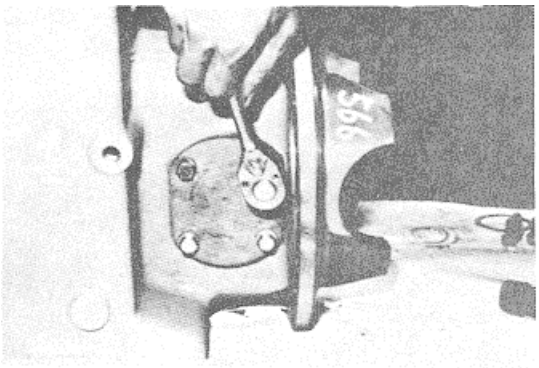
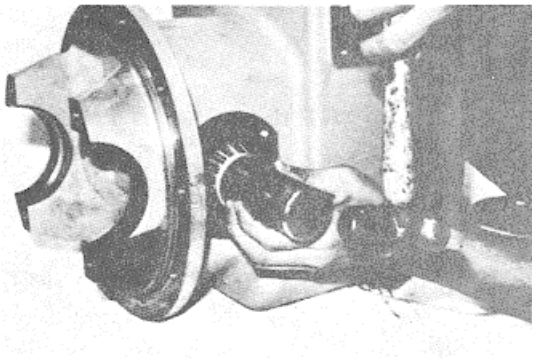


Fig. 4-367.

(12) Install tapered roller bearing cone on reduction gear.



4-368

(13) Install tapered roller bearing cup.

Fig. 4 -369.

(14) Install shim and cap.

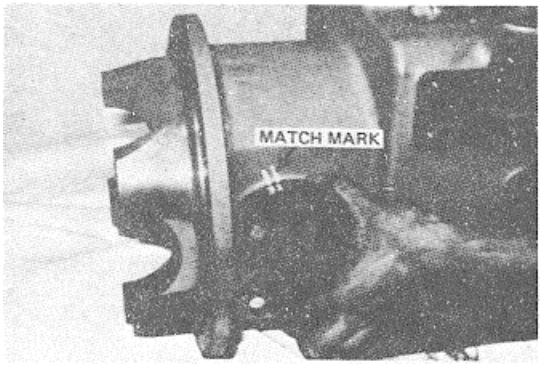


Fig. 4-370.

(15) Measure the backlash between output shaft and spiral bevel gear.

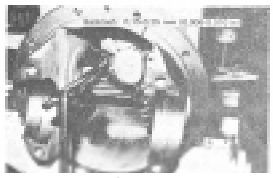


Fig. 4-371.

(16) Spread spiral bevel gear teeth with red minimum and check for the meshing condition in the following manner:

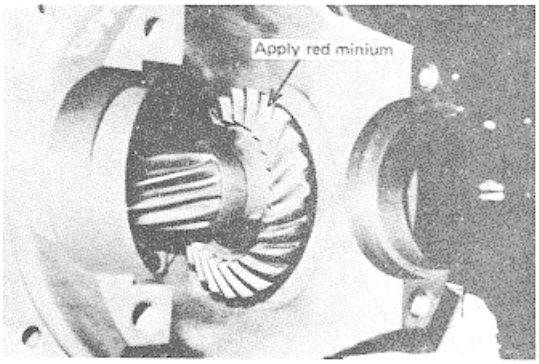


Fig. 4-372.

ADJUSTMENTS OF BACKLASH ON BEVEL GEAR AND OUTPUT SHAFT

1 Dissolve some red lead in oil and apply on 7 to 13 teeth of the spiral bevel gear evenly.

2 Turn the ring gear to check gear-tooth contact bearing on the bevel gear.

3 If gears are contacted improperly, adjust the gear-tooth contact of the spiral bevel gear and output shaft gear in the following manner to obtain the correct backlash.

(A) Properly Adjusted Gear-tooth Contact

Fig. 2-185 shows the correct gear-tooth contact bearing. The gear-tooth contact is initiated from the small end and extended to approximately 75 % of tooth length toward the large end. In the above condition, the output shaft gear and spiral bevel gear are properly installed and the correct backlash is obtained.

Standard backlash: 0.15 to 0.25 mm
(0.00591 to 0.00984 in.)

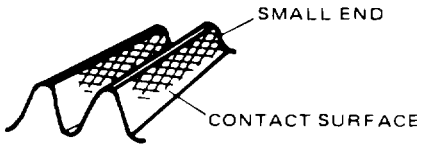
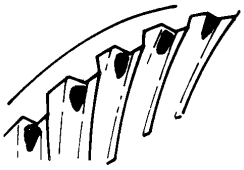
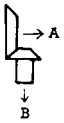
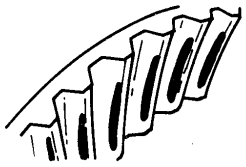
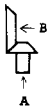
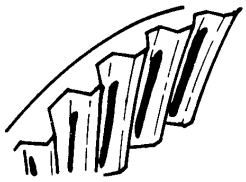


Fig. 4-373. Properly Adjusted Gear-tooth Contact.

(B) The gear-tooth contact bearing and backlash should be adjusted in the following manners:

Gear-tooth Contact	Cause	Corrective Action
Toe Bearing	Spiral bevel gear is located too close to output shaft gear. (Bearing is small.)	A: To adjust gear-tooth contact. B: To adjust backlash (1) Move spiral bevel gear away from output shaft gear. (2) Add shims to output shaft gear to move it toward spiral bevel gear to adjust backlash.
 Heel Bearing	Spiral bevel gear is located too far from output shaft gear. (Bearing is small) Output shaft gear is located too far from spiral bevel gear. (Large backlash)	(1) Move spiral bevel gear toward output shaft gear. (2) Omit shims of output shaft gear. Move output shaft gear away from spiral bevel gear to adjust backlash. 
 High Bearing	Output shaft gear is located too close to spiral bevel gear. (Small backlash)	(1) Add shims to output shaft gear and move output shaft gear toward spiral bevel gear. (2) Move spiral bevel gear away from spiral bevel gear to adjust backlash. 
 Low Bearing		(1) Omit shims of output shaft gear and move output shaft gear away from spiral bevel gear. (2) Move spiral bevel gear toward output shaft gear to adjust backlash

(17) Install O ring, on seal retainer.

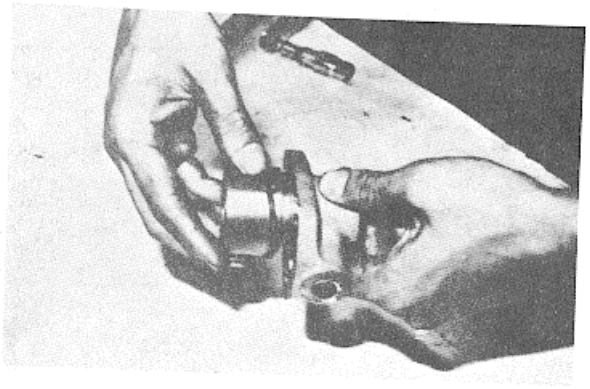


Fig. 4-374.

(18) Install O-ring on seal retainer flange section.

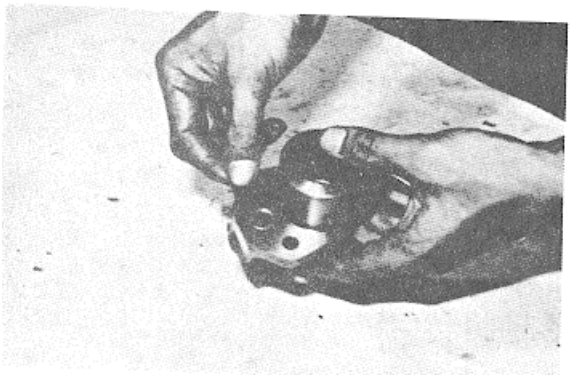


Fig. 4-375.

(19) Install seal retainer on transmission case. At this time, do not drive in seal retainer.

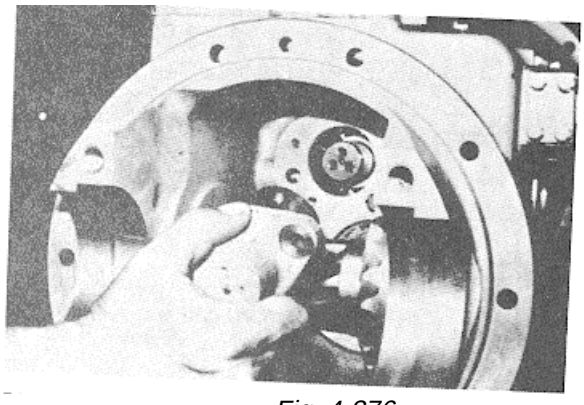


Fig. 4-376.

(20) Tighten seal retainer fitting bolts to the torque of 155-175 kg-cm (11.2-12.7 ft-lbs)

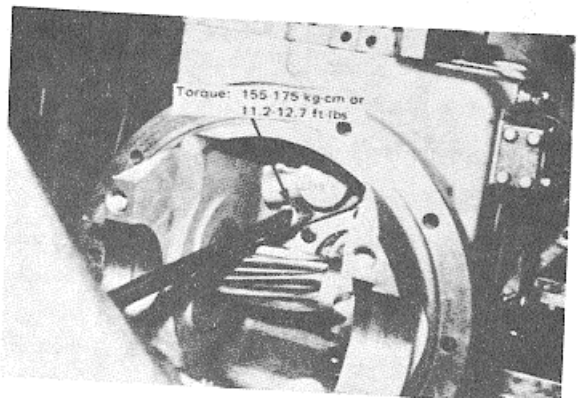


Fig. 4-377.

(21) Install oil strainer in transmission case.

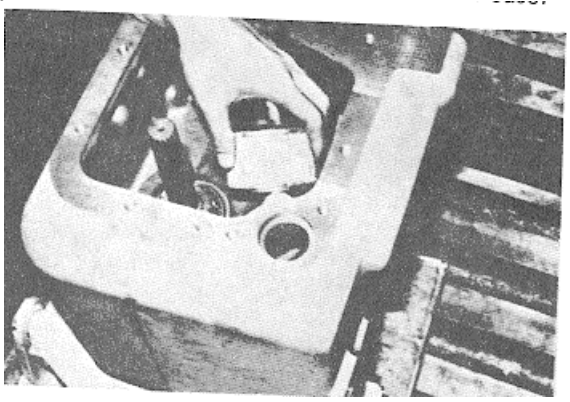


Fig. 4-378.

(22) Install O-ring on pipe in which strainer is fitted.

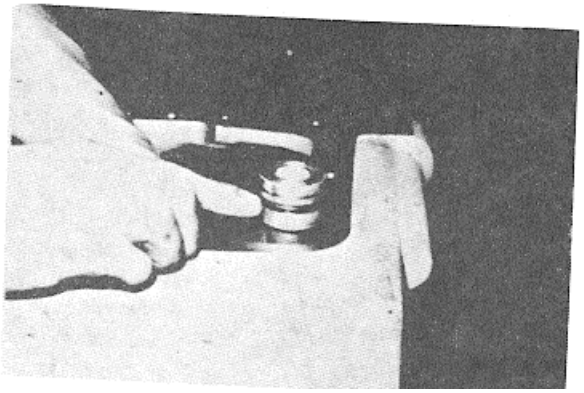


Fig. 4-379.

WARNING
Exercise care when removing snap rings.

(23) Install snap ring on the pipe.

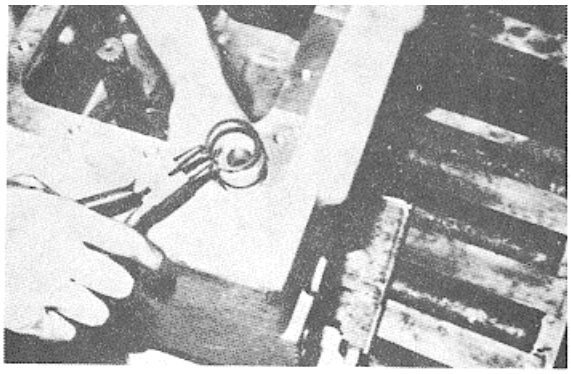


Fig. 4-380.

(24) Install O-ring on strainer flange section.

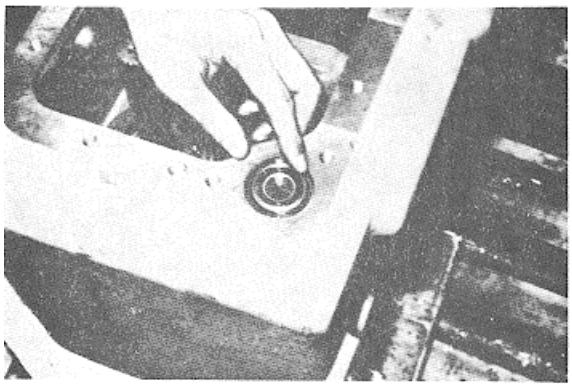


Fig. 4-381.

(25) Install ball bearing on reverse idle gear.

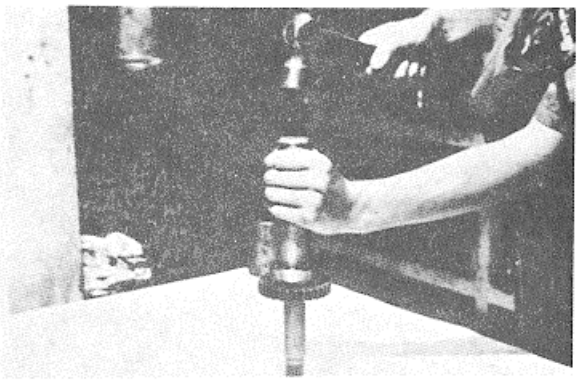


Fig 4-382.

(26) Install reverse idle gear in transmission case.

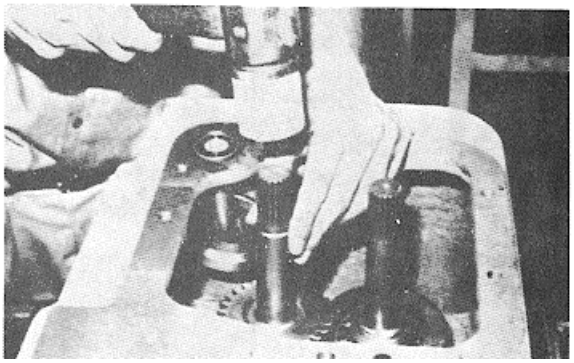


Fig. 4-383.

(27) Install clutch pack in transmission case.

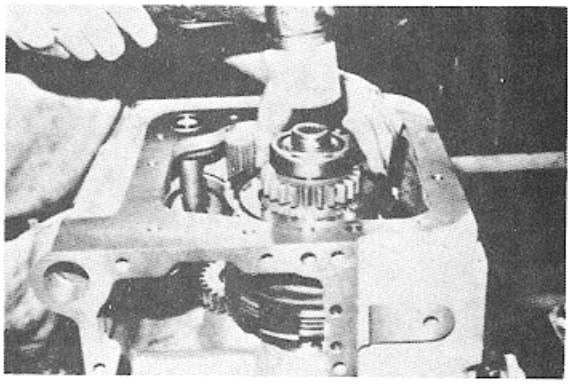


Fig. 4-384.

(28) -Put packing on transmission case.

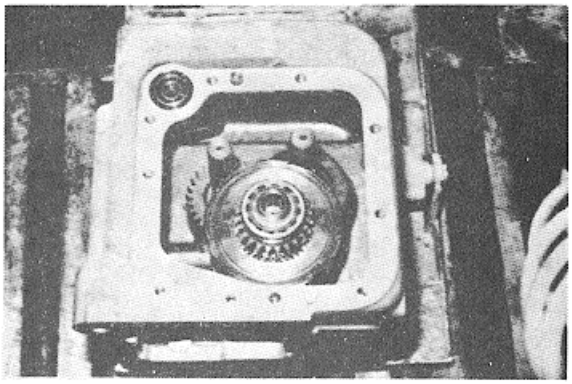


Fig 4-385.

(29) Install torque converter housing on transmission case.

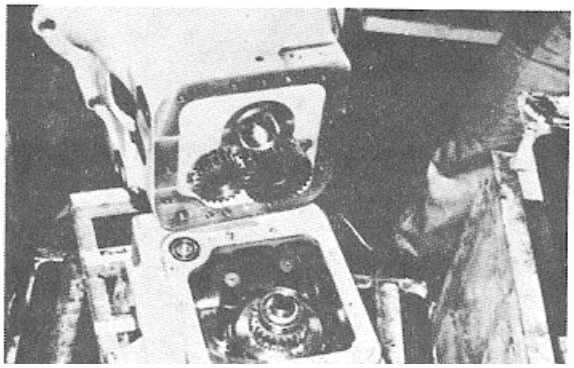


Fig. 4-386.

(30) Tighten fitting bolts of torque converter housing.

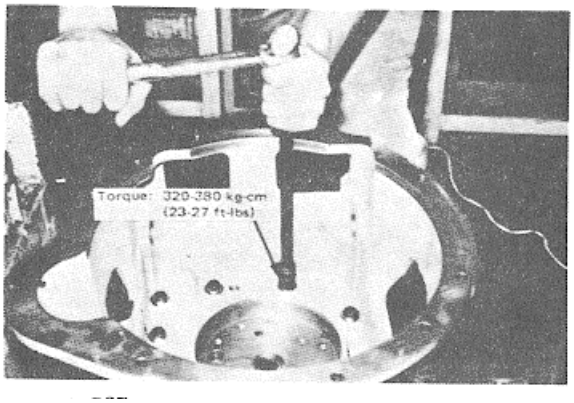


Fig. 4-387.

(31) Put packing on charging pump mounting part of torque converter housing.

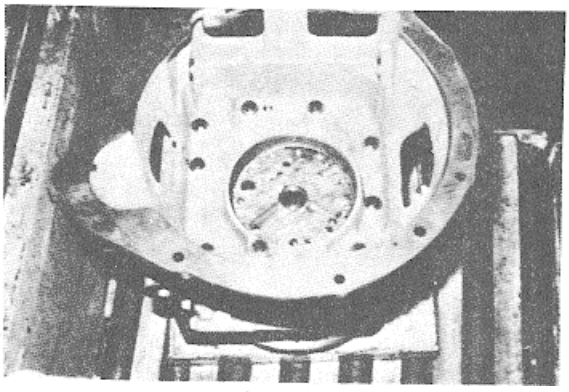


Fig. 4-388.

(32) Install charging pump.

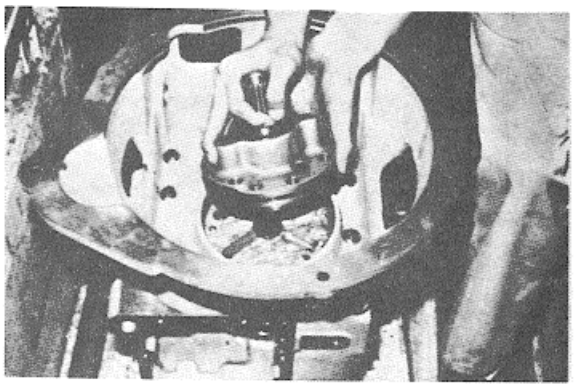


Fig. 4-389.

(33) Align charging pump fitting holes with torque converter housing counterparts.

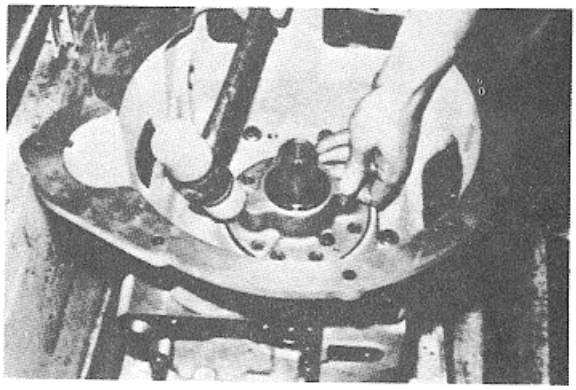


Fig. 4-390.

(34) Install fitting bolts and tighten to the torque of 190 to 230 kg-cm (13.7 to 16.6 ft-lbs).

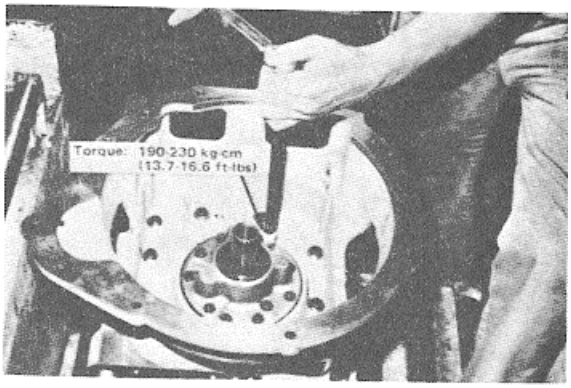


Fig. 4-391.

(35) install torque converter housing assembly.

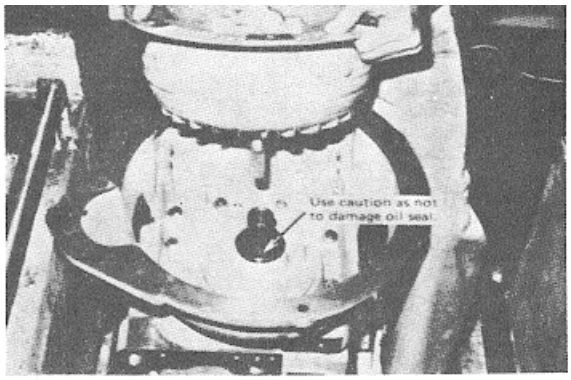


Fig. 4-392.

(36) Make sure torque converter assembly is securely installed.

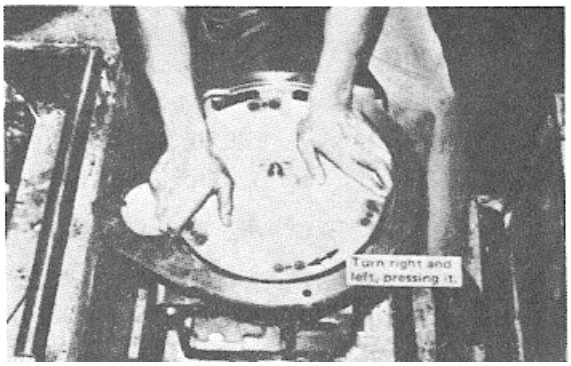


Fig. 4-393.

(37) Put packing on top of transmission case and install case cover.

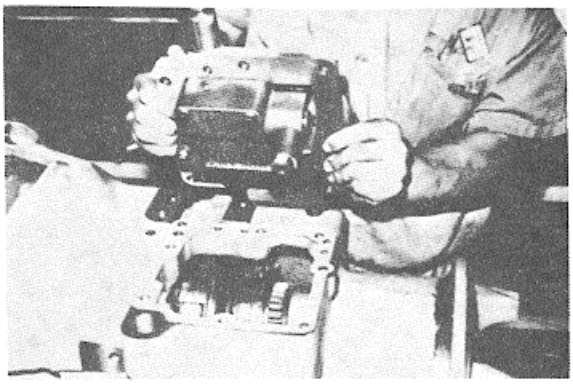


Fig. 4-394.

(38) Tighten fitting bolts

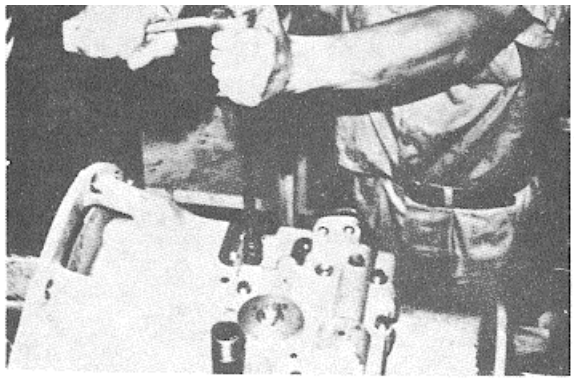


Fig. 4-395.

(39) Install high pressure pipe.

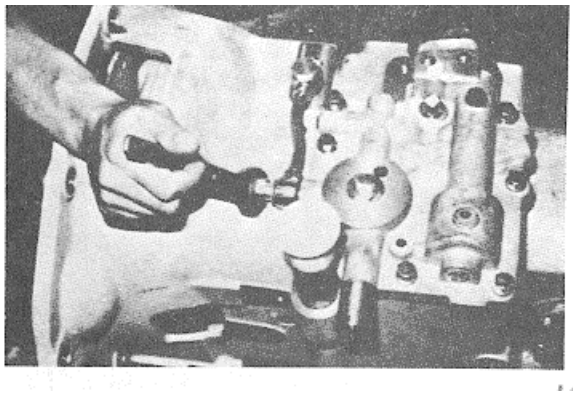


Fig. 4-396.

(40) Install oil filter by hand. Do not use a tool.

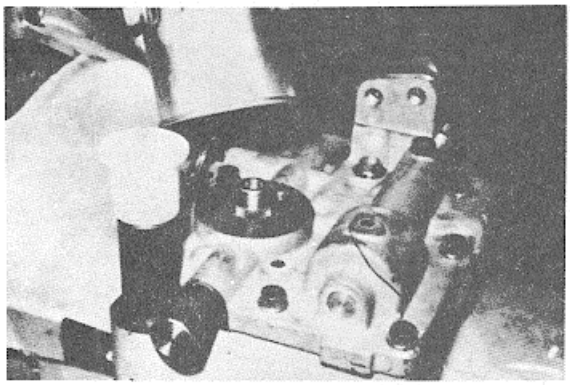


Fig. 4-397.

(41) Install inching valve with packing.

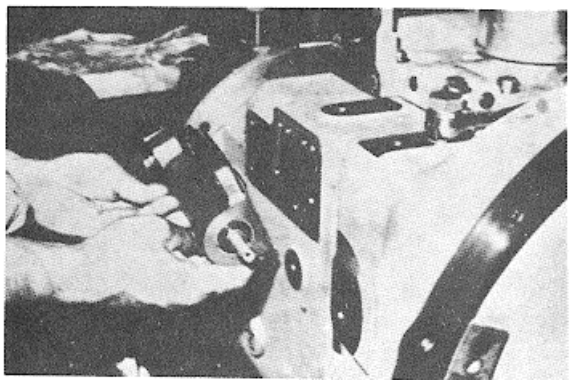


Fig. 4-398.

(42) Install differential assembly.

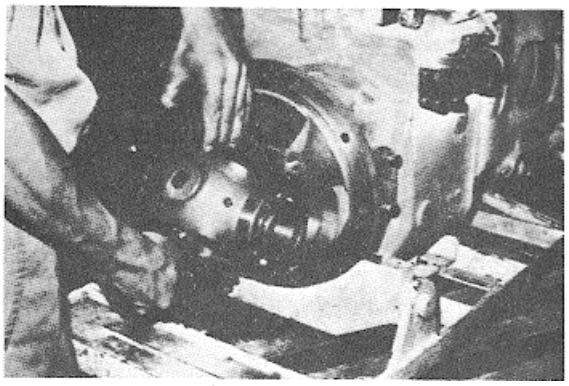


Fig. 4-399.

(43) Install bearing cap, aligning marks of case and cap.

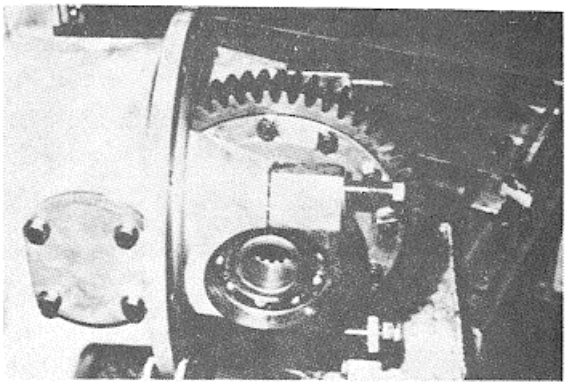


Fig. 4 -400.

(44) Tighten fitting bolts and bend tangs of lock plate.
Tightening torque: 920-1080 kg-cm
(66.5-78.1 ft-lbs)

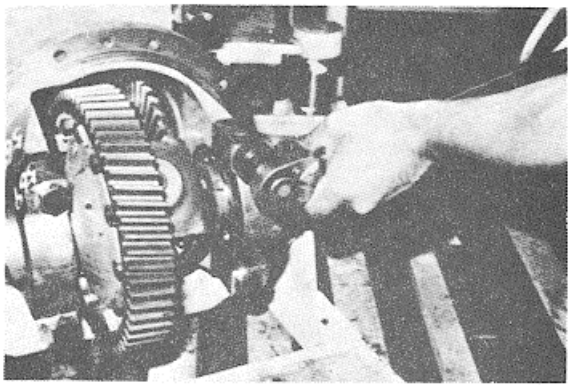


Fig. 4-401.

REDUCTION GEAR AND DIFFERENTIAL

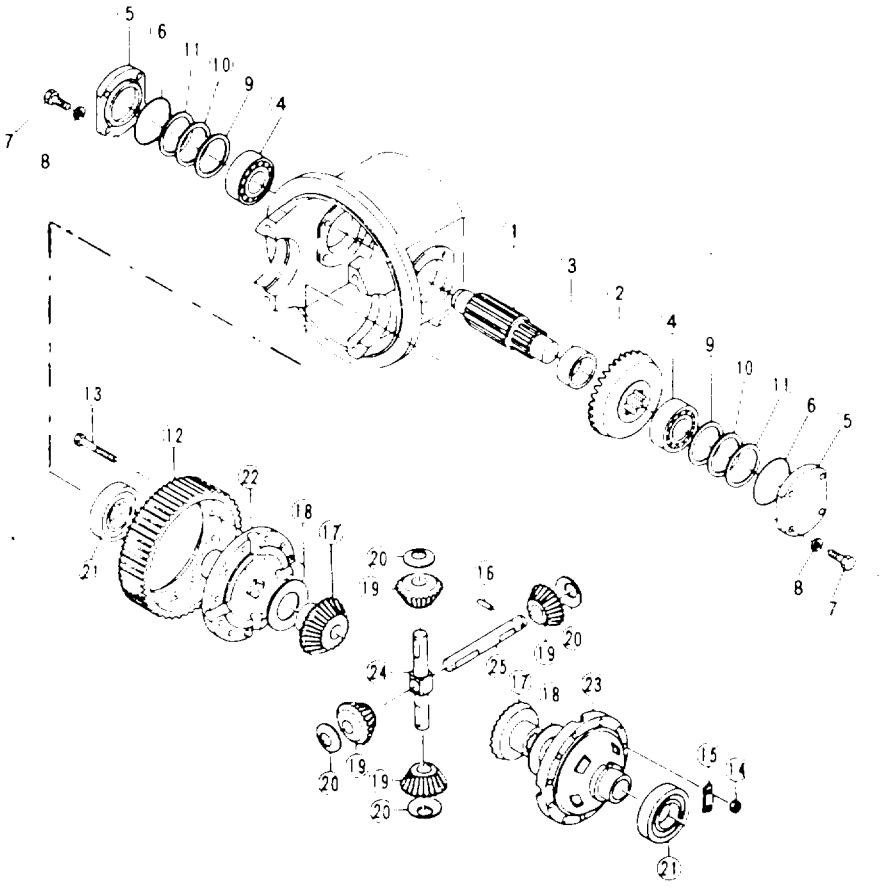


Fig. 4-402. Differential Component Parts

1. Gear shaft
2. Spiral bevel gear
3. Spacer
4. Tapered roller bearing
5. Bearing cap
6. O-ring
7. Bolt
8. Washer
9. Shim
10. Shim
11. Shim
12. Ring gear
13. Reamer bolt
14. Nut
15. Lock plate
16. Pin
17. Side gear
18. Washer
19. Pinion gear
20. Washer
21. Ball bearing
22. Flange half
23. Plain half
24. Pinion shaft
25. Pinion shaft

TROUBLESHOOTING GUIDE

Trouble	Probable Cause	Remedy
1. Noisy differential. Attention should be paid to noise from the differential since abnormal noise could mean it is out of order. However, It is easy to mistake the sound from the engine, transmission, muffler, reduction gear, drive wheels, or wheel bearings for that of the differential. Before attempting any repairs on the differential, make certain that the abnormal noise comes from the differential.		
(1) Noisy gears during accelerating.	Lack of lubricating oil or improper quality of oil.	Refill or replace oil. (SAE 90)
	Ring gear teeth worn or damaged.	Repair or replace.
	Bearings worn or broken.	Replace.
	Drive shaft spline worn.	Replace.
(2) Noisy gears during traveling.	Pinion gear teeth or side gear teeth worn or damaged.	Repair or replace.
	Worn thrust plate of pinion gear or side gear.	Replace.
	Pinion shaft worn.	Replace.
(3) Noise is heard when steering.	Pinion gear, side gear, or pinion shaft worn.	Replace worn out part.
2. Truck does not drive. When the truck does not drive properly, check the differential by turning one wheel with front wheel jacked up. After making certain the differential is out of order, proceed with the troubleshooting of the differential.		
(1) Truck can not travel or violent noise is heard.	Metal piece(s) is(are) mixed in the unit.	Remove.
	Broken bearing.	Replace.
	Drive shaft damaged.	Replace.
	Ring gear teeth damaged.	Replace gear.

DISASSEMBLY

Cleanliness is of extreme importance and an absolute must in the repair and overhaul of this unit. Before attempting any repairs, the exterior of the unit must be thoroughly cleaned to prevent the possibility of dirt and foreign matter entering the mechanism.

(1) Straighten tangs of 12 lock plates.

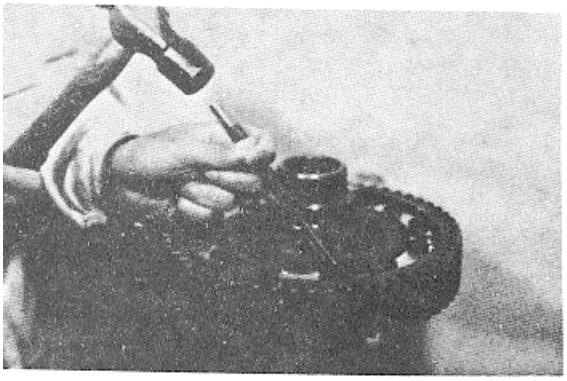


Fig. 4-403. Straightening Lock Plate Tangs

(2) Loosen reamer bolt lock nuts, and remove six lock plates and 12 lock nuts.

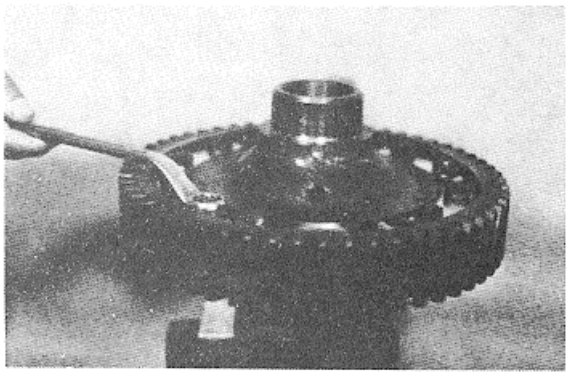


Fig. 4-404. Removing Lock Nuts

(3) Remove 12 reamer bolts.

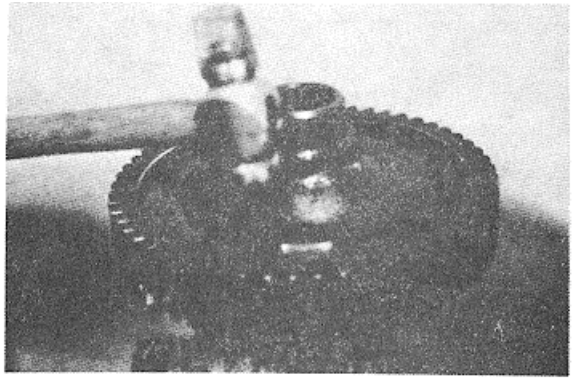


Fig. 4-405. Removing Reamer Bolts

(4) Remove ring gear from cross case.

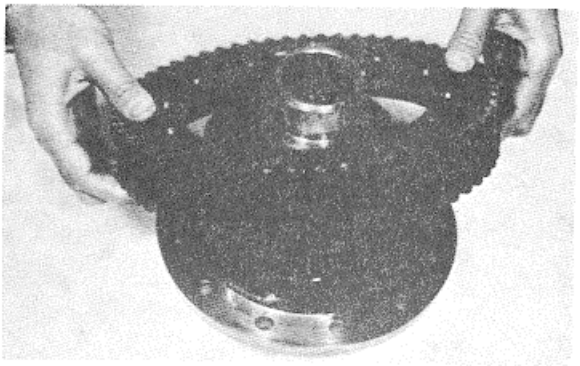


Fig. 4-406. Removing Ring Gear

(5) Separate cross case into flange half and plain half.

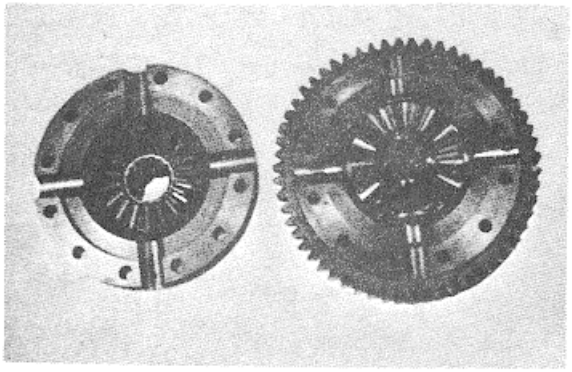


Fig. 4-407. Disassembling Cross Case

(6) Pinion shaft can be easily disassembled by removing knock-out pin. Remove four pinion gears and two side gears, along with thrust plates.

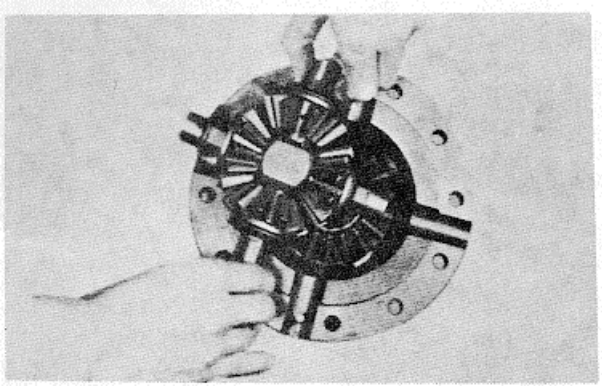


Fig. 4-408. Removing Pinion Gear and Side Gears

(7) Remove pinion gears and thrust plates from pinion shafts.

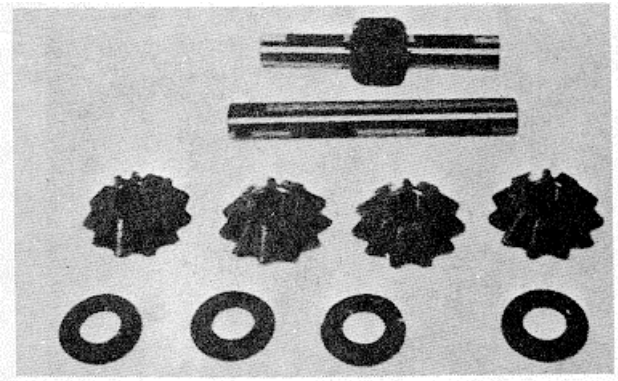


Fig. 4-409. Disassembling Pinion Shaft and Pinion Gears

(8) Replace ball bearing Inside cross case, if defective. To do so, use a suitable bearing puller.

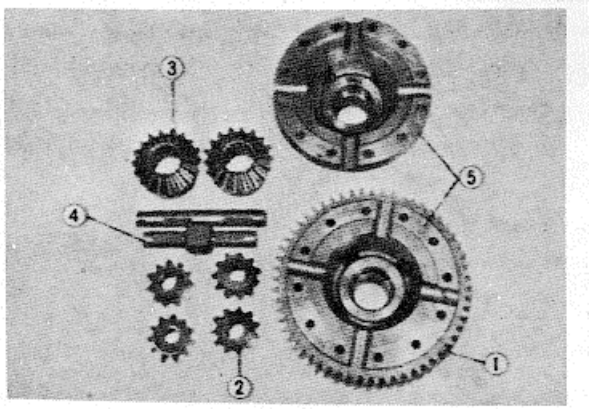


Fig. 4-410. Differential Component Parts

1. Ring gear
2. Pinion gear
3. Side gear
4. Pinion shaft
5. Cross case (Right & left)

INSPECTION

The disassembled parts should be thoroughly cleaned and air dried before inspection. Parts which have been steam cleaned should be lubricated just after they have dried. Inspection should be performed in a clean orderly area and due care exercised to prevent dirt and foreign matter from entering the unit.

(1) Check ball bearings on each cross case half for looseness, wear or damage. Any defective bearing should be replaced.

Unit: mm (in)

Checking Item	Service Limit
Looseness of ball bearings on each cross case half	0.2 (0.008)

(2) Check ring gear teeth for wear, breakage, or damage. If insignificant repair with oil stone. If they are excessively worn or damaged, replace ring gear with a new one.

Unit: mm (in)

Checking Item	Standard Value	Service Limit
Displacement over seven (7) teeth of ring gear	78.513-78.583 (3.091-3.094)	78.363 (3.085)

(3) Using a dial gauge, check ring gear for deflection. If an excessive deflection is found, replace ring gear.

Unit: mm (in)

Checking Item	Standard Value	Service Limit
Deflection of side face of ring gear	0.05 (0.002)	--

(4) Using a dial gauge, check ring gear fitting part of cross case for deflection. If deflection is slight, repair by a lathe. If excessive deflection is found, replace cross case with a new one.

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area. Avoid contact with skin, eyes and clothes and don't breathe vapors. Do not use near open flame or excessive heat. If you become dizzy while cleaning with solvent, get fresh air immediately and get medical aid. If contact with skin or clothing is made, flush with water. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

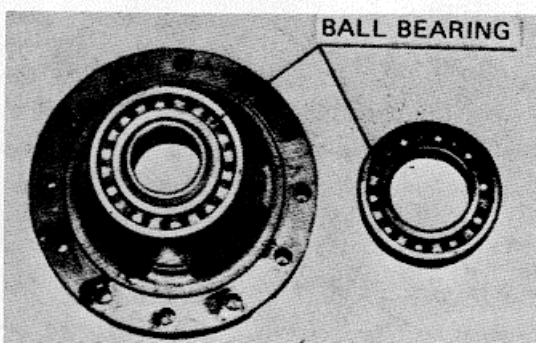


Fig. 4-411. Checking Ball Bearings

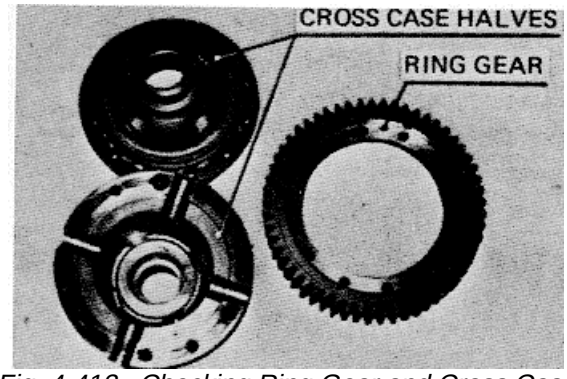


Fig. 4-412. Checking Ring Gear and Cross Case

Unit: mm (in)

Checking Item	Standard Value	Service Limit
Deflection of ring gear fitting part of cross case	0.05 (0.002)	--
I.D. of side gear fitting part of cross case	54.00-54.03 (2.126-2.127)	-- --

(5) Check side gear fitting part of each cross case half for damage or wear. If excessive wear or damage is found, replace cross case.

(6) Check pinion gear teeth for wear, damage or cracks, and if unsatisfactory, replace.
(7) Measure inner diameter of pinion gear and out diameter of pinion shaft. If excessively worn, replace.
(8) Check pinion gear thrust plates for wear or damage. If unsatisfactory, replace thrust plate.

Unit: mm (in)

Checking Item	Standard Value	Service Limit
I.D. of pinion gear	22.01-22.05 (0.867-0.868)	--
O.D. of pinion shaft	21.99-22.00 (0.8658-0.866)	--
Pinion gear thrust plate thickness	6.0 (0.236)	--
Pinion gear thrust plate thickness (replacement part)	5.8, 6.2, 6.4 0.228, 0.244, 0.252)	--

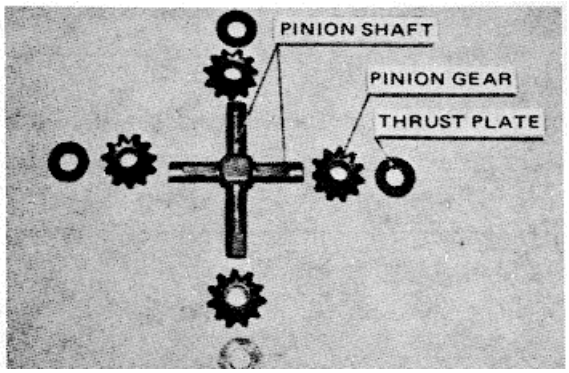


Fig. 4-413. Checking Pinion Gear and Shaft

(9) Check side gear splines for wear or damage by fitting drive shaft to side gear and measuring the clearance between drive shaft splines and side gear splines in rotational direction by means of a dial gauge. If excessive wear or damage is found, replace side gears with new ones.
(10) Check side gear thrust plates for wear or damage. If any defect is found, replace the thrust plate.

Unit: mm (in)

Checking Item	Standard Value	Service Limit
Clearanced between side gear and drive shaft splines in rotational direction.	0.04-0.10 (0.0016-0.004)	--
Side gear thrust plate thickness	2.0 (0.08)	--
Side gear thrust plate thickness (replacement part)	1.8, 2.2, 2.3 (0.071, 0.087 0.091)	--

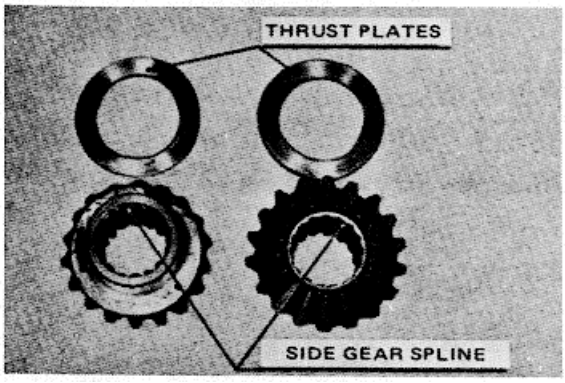


Fig. 4 -414. Checking Side Gear Spline

(11) Check side gears and pinion gears for backlash. If measured value exceeds the standard specified below, replace thrust plates.

Unit: mm (in)

Checking Item	Standard Value	Service Limit
Backlash on side gears and pinion gears	0.15-0.25 (0.006-0.01)	--

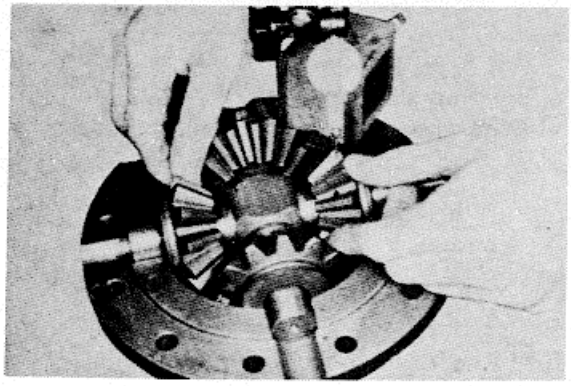


Fig. 4-415. Checking Backlash on Side Gears and Pinion Gears

REASSEMBLY AND ADJUSTMENT

Reassemble differential in the sequence opposite to disassembly. The following requirements given below should be observed.

- Reassembly should be performed in a clean orderly area and due care exercised to prevent the possibility of dirt and foreign matter entering the unit Also be careful not to damage parts when assembling them.
- Make certain all parts are free of dirt, foreign matter, etc. New bearings should be unpacked just before installation. When Installing new bearings, do not wash the grease off them.
- Sliding sections of each part should be lubricated with gear oil lust before installation.

(1) Drive ball bearing on cross case halves.

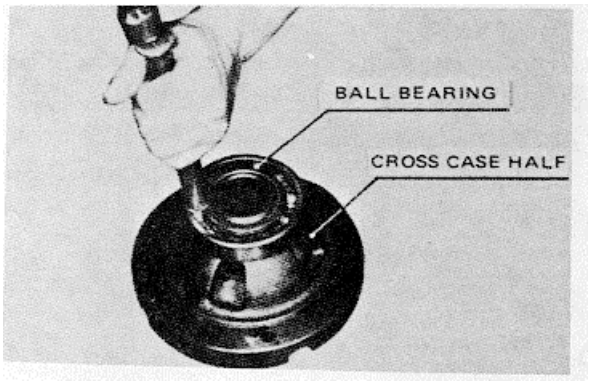


Fig. 4-416. Installing Ball Bearing

(2) Install pinion gears and side gears on cross case half. Adjust the backlash using thrust plates properly.

St'd backlash: 0.15-0.25 mm (0.006-0.01 in)

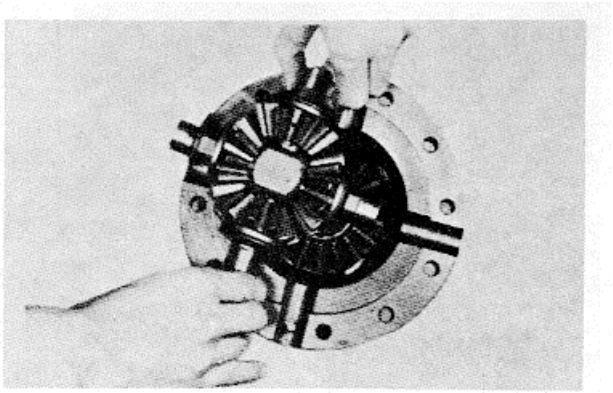


Fig. 4-417. Installing Pinion Gears

(3) Align shaft hole with cross case hole correctly, and install pinion shaft knockout pin from the correct side.

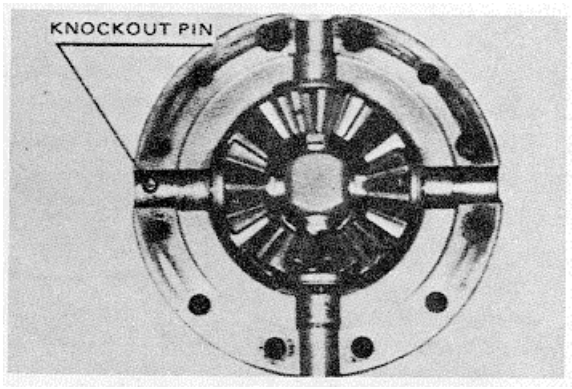


Fig. 4-418. Installing Knockout Pin

(4) Assemble both cross case halves with lock bolts. Tighten bolts to the specified torque evenly and bend tangs of lock plates.

Bolt torque: 4.8-6.4 kg-m (34.7-46.3 ft-lbs)

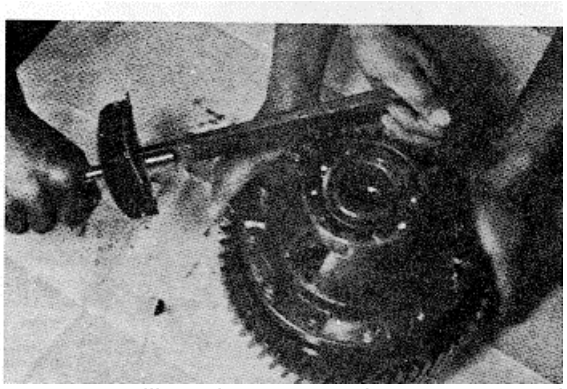


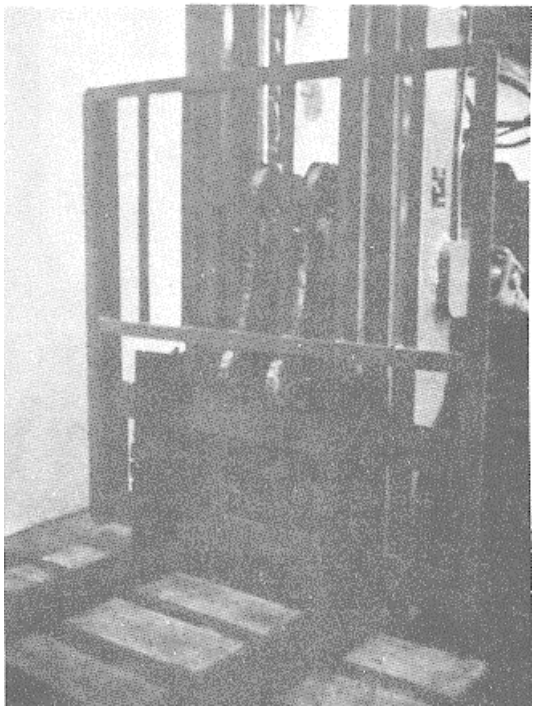
Fig. 4-419. Installing Ring Gear and Cross Case Halves

REPLACEMENT OF UPRIGHT ROLLERS

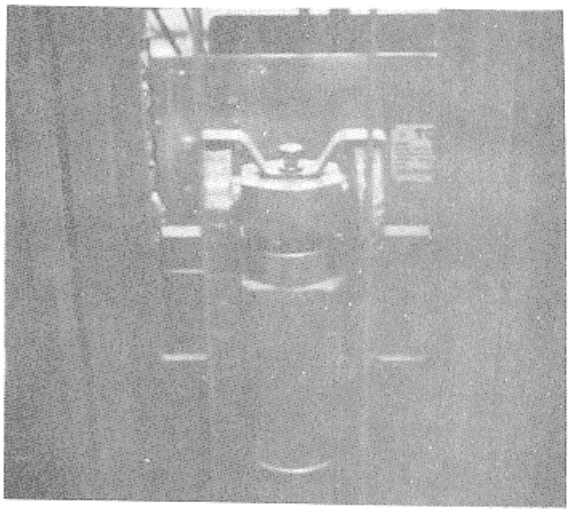
WARNING

To replace or adjust the rollers in the upright, follow the procedures below using extreme caution. Always block or chain the channels before working on each section. It is recommended for safety's sake that two people work together on upright repairs.

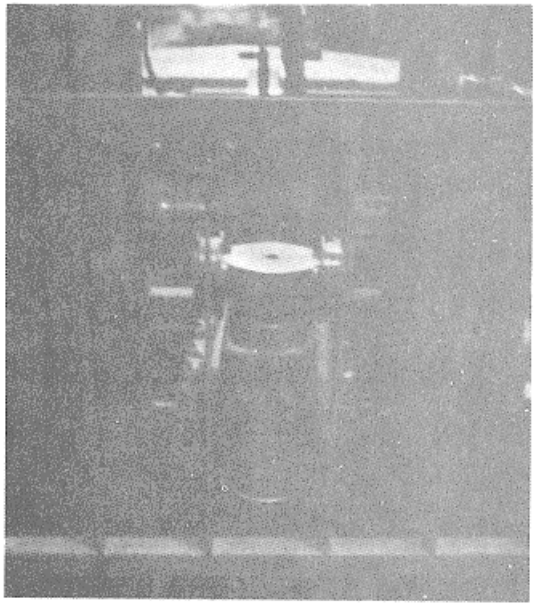
1. To remove the fork carriage, lower the forks onto a pallet so the chains become slack.



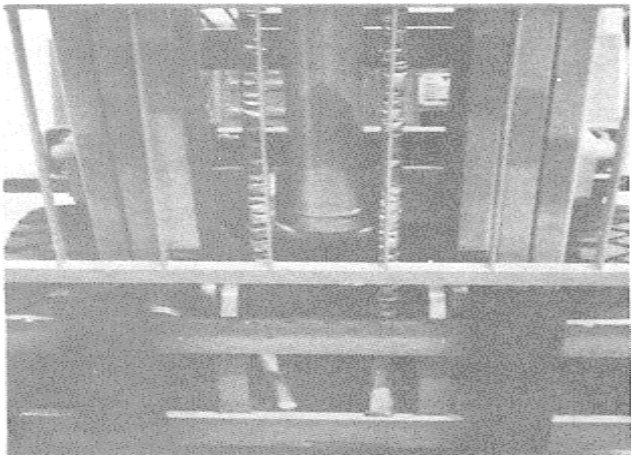
2. Remove the bolt, in the top center of the front lift cylinder, that holds the chain guard in place.



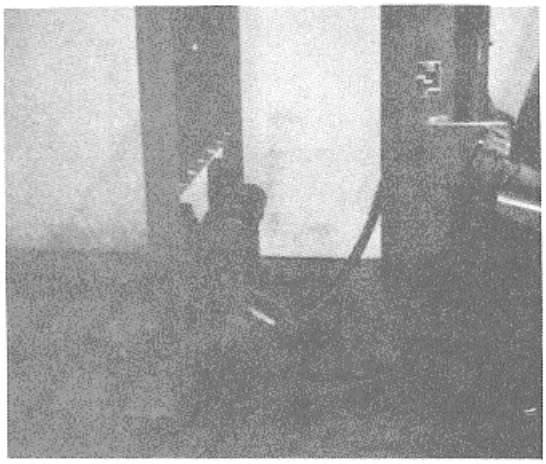
3. Lift the chains off the rollers.



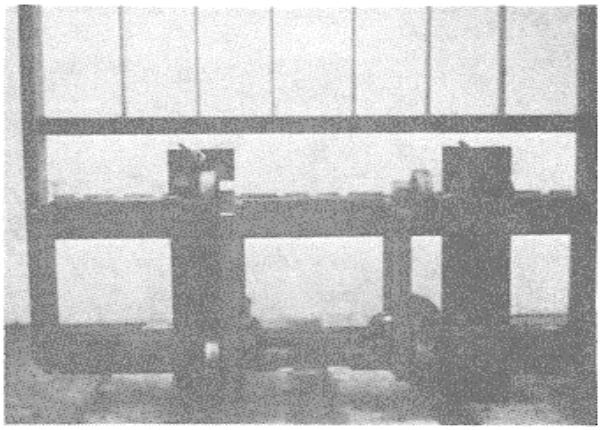
4. Hydraulically raise the inner channel above the top carriage rollers.



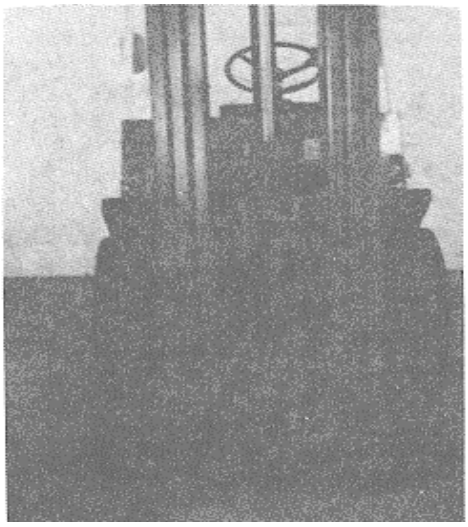
5. Back the Forklift away from the carriage enough so you can remove the cotter pin and lock nuts from each chain anchor at the carriage. Now you can move the forklift independently of the carriage.



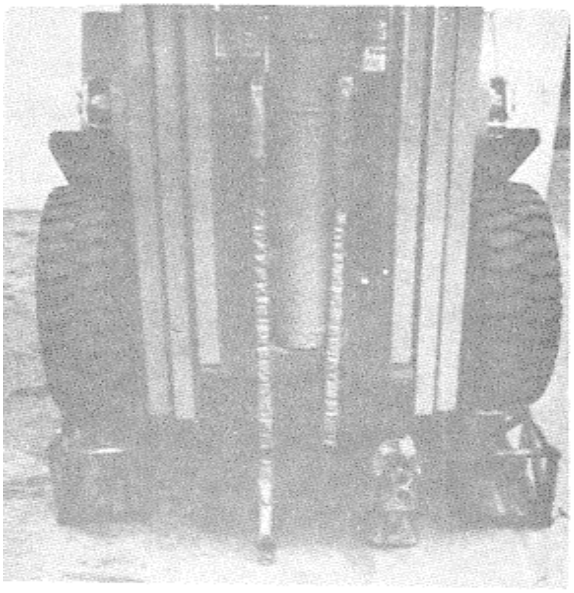
6. Carriage rollers are now accessible for replacement and or adjustment.



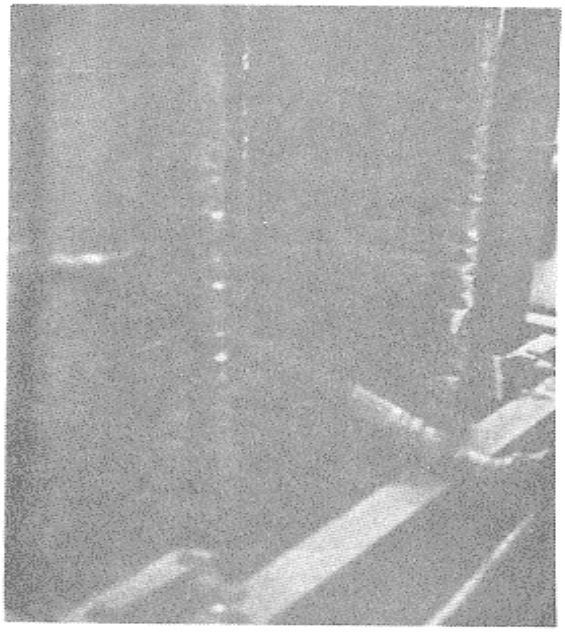
7. Place the forklift on stands or over a mechanic's pit, if available.



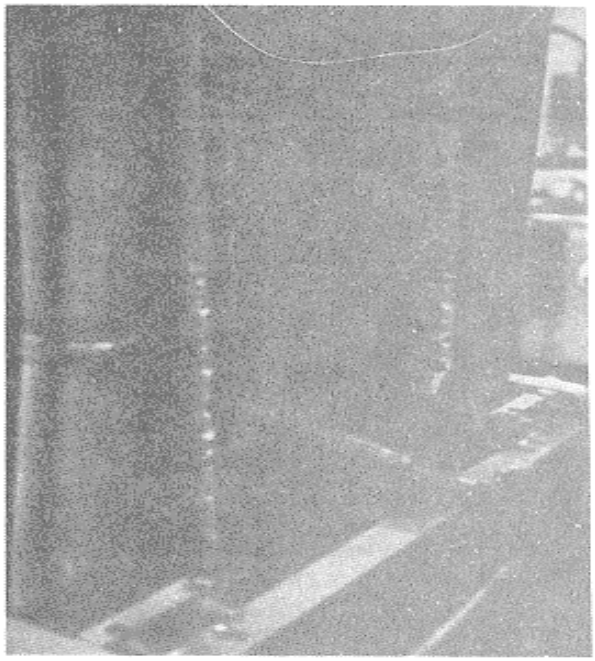
8. Jack the inner rail or lift the rail with a hoist enough to get access to the main chain anchor blocks in back of the inner channel.



9. Remove the chains, the blocks and the hose mounting bracket.

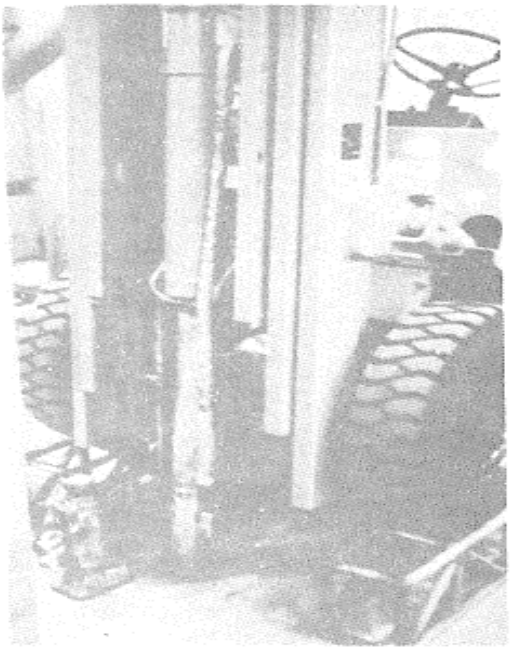


9A. Now the inner channel can pass below the middle channel.

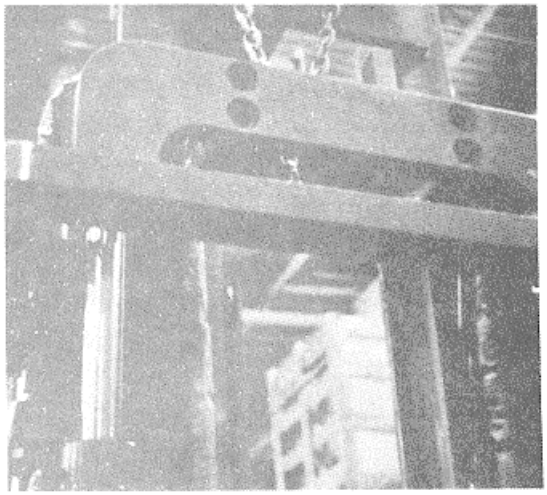


10. Lower the inner channel to gain access to top and bottom rollers and the top wear plates. Replace or adjust as necessary.

11. Jack or lift the inner channel up and support securely (about 3 feet).



12. Hydraulically lift the inner channel to gain access to the head (cross member that supports the chain rollers) at the back of the middle channel. Remove the four bolts.



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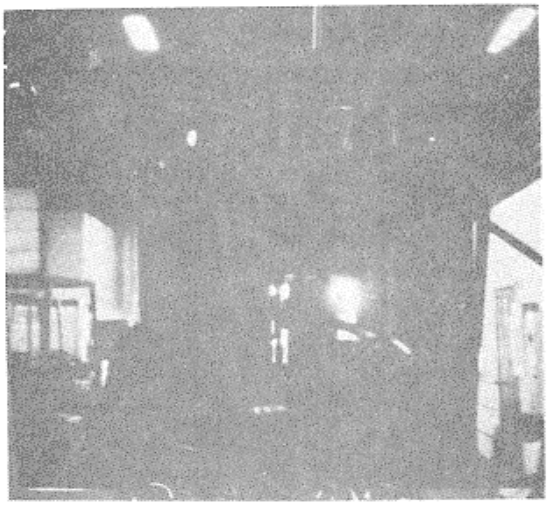
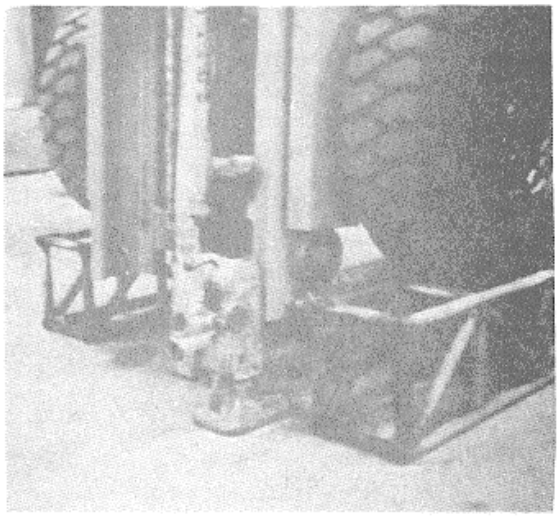
13. Hydraulically lower the piston head to the full lowered position by slowly pushing forward on the lifting control handle.



14. Now you can lower the middle channel below the stationary channel to gain access to the inner channel to gain access to the top rollers of the middle channel as well as the wear plates.



15 Assembly is the reverse of disassembly

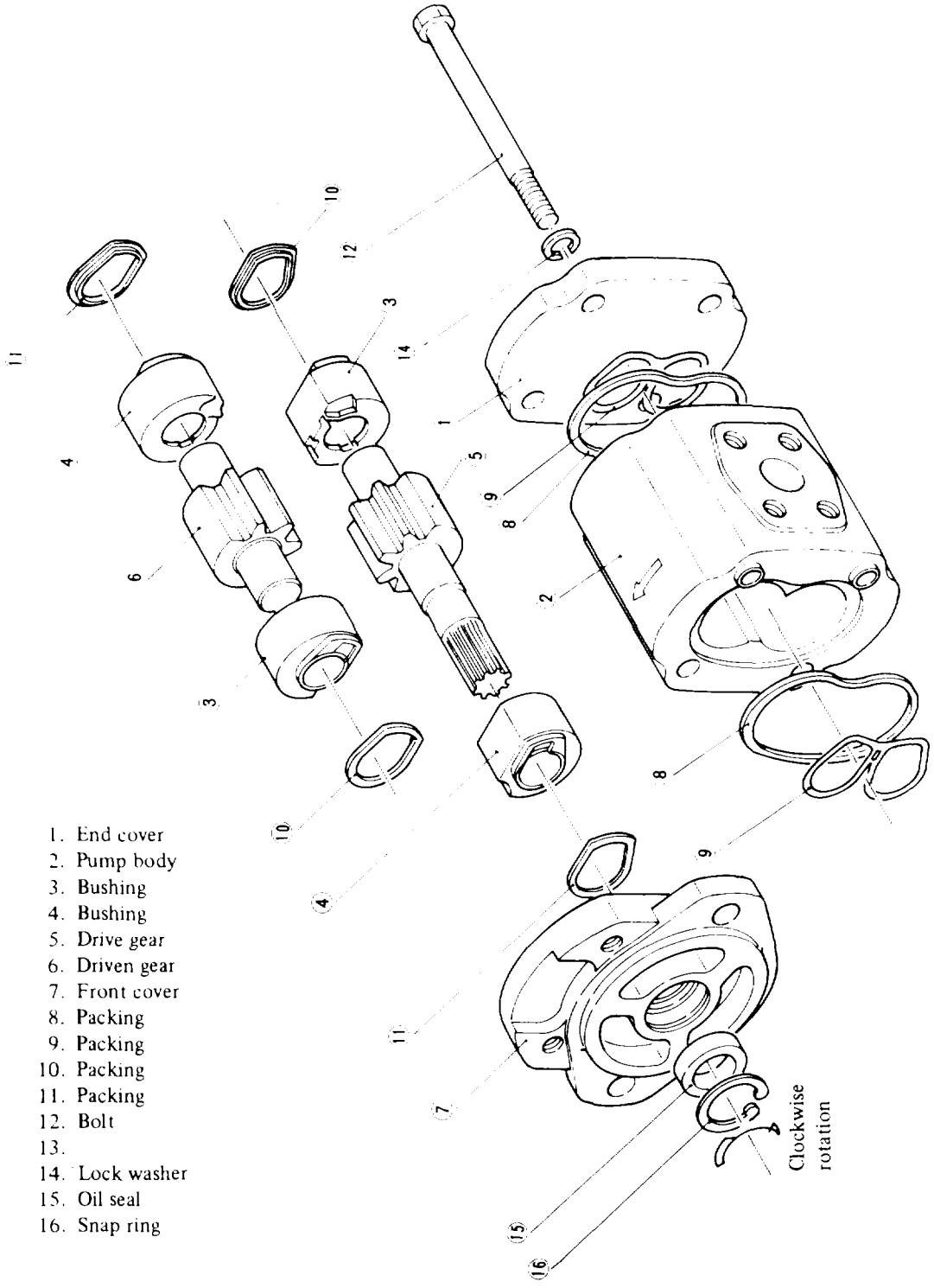
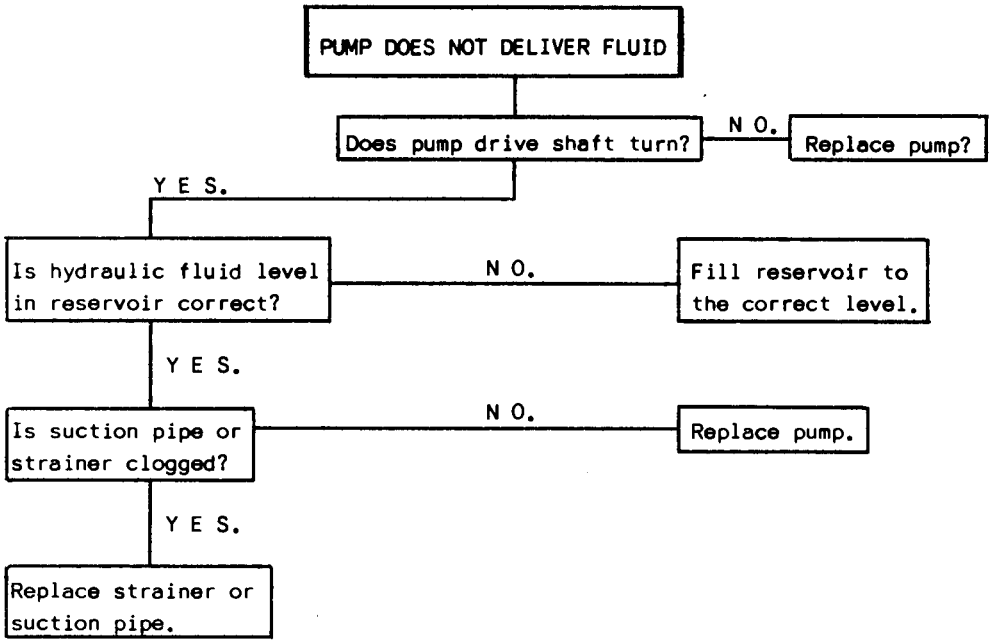
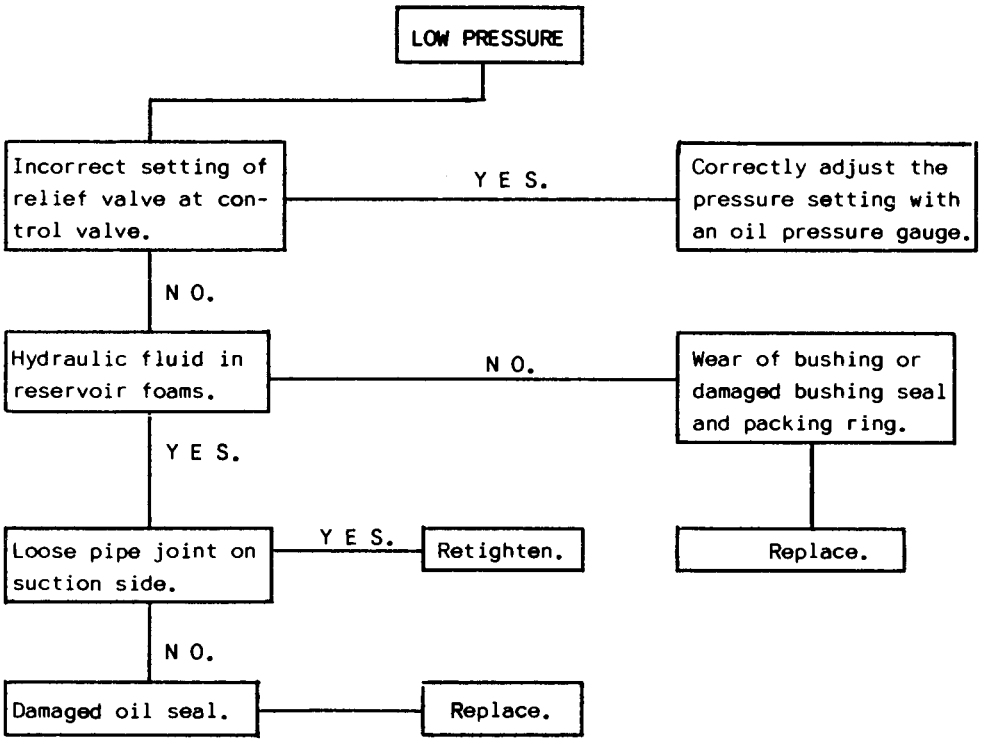


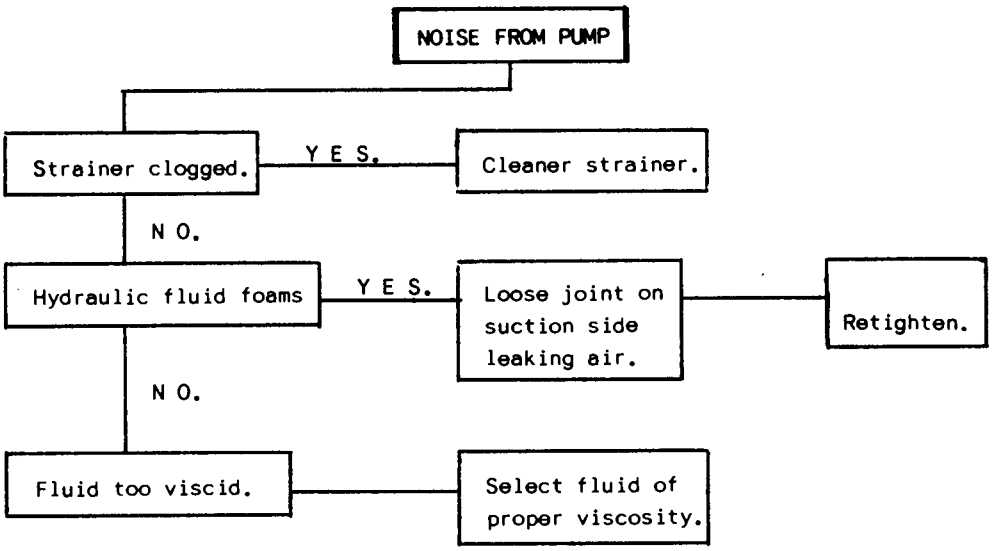
Fig. 4-420. Clockwise Rotation Type Gear Pump FG30N7

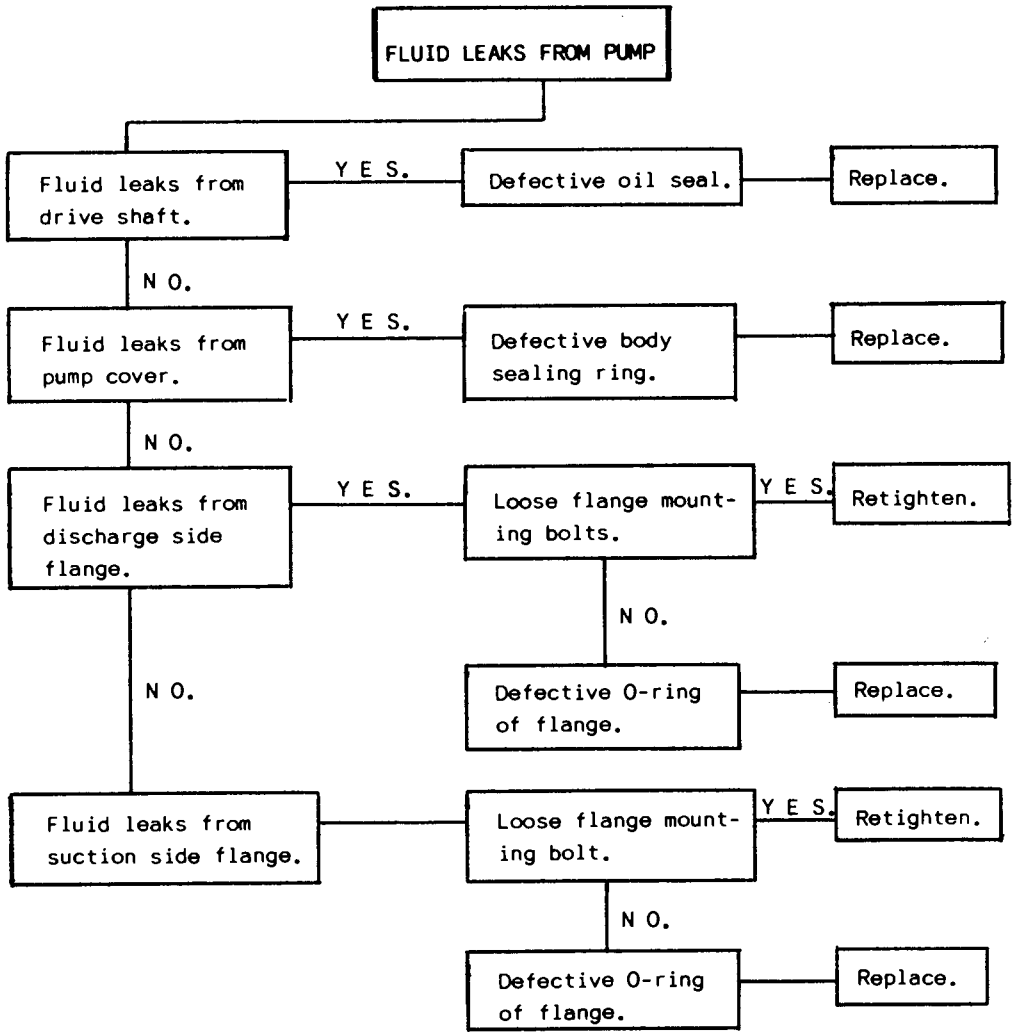
HYDRAULIC PUMP

TROUBLESHOOTING GUIDE





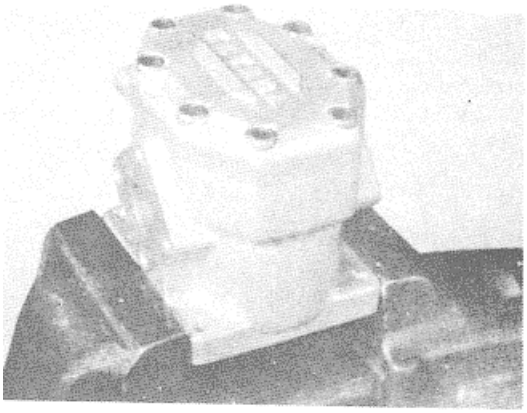

NOISE FROM PUMP
Strainer clogged.
Y E S.
Cleaner strainer.
N O.
Hydraulic fluid foams
Y E S.
Loose joint on suction side leaking air.
Retighten.
N O.
Fluid too viscid.
Select fluid of proper viscosity.


FLUID LEAKS FROM PUMP
Fluid leaks from drive shaft.
Y E S.
Defective oil seal.
Replace.
N O.
Fluid leaks from pump cover.
Y E S.
Defective body sealing ring.
Replace.
N O.
Fluid leaks from discharge side flange.
Y E S.
Loose flange mounting bolts.
Y E S.
Retighten.
N O.
Defective O-ring of flange.
Replace.
N O.
Fluid leaks from suction side flange.
Loose flange mounting bolt.
Y E S.
Retighten.
N O.
Defective O-ring of flange.
Replace.

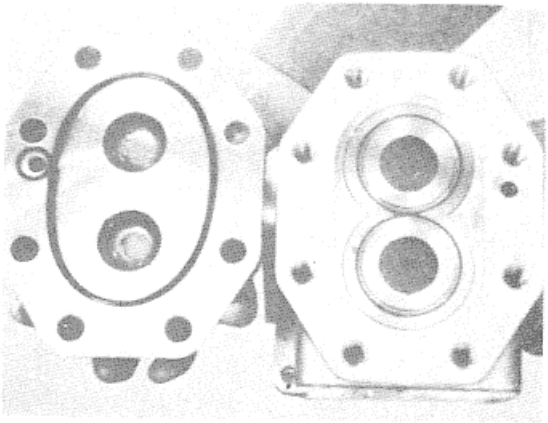
DISASSEMBLY

1. Clean the exterior of the pump arid hold the pump with a vise.

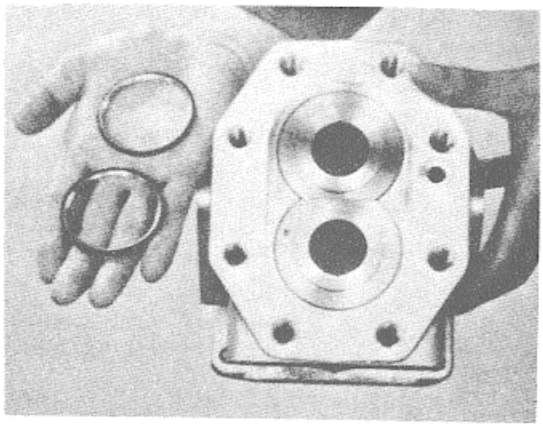
Do not clamp the port. Clamp the flange when holding the pump with a vise.



2. Loosen the eight socket head cap bolt',. and remove the cover.

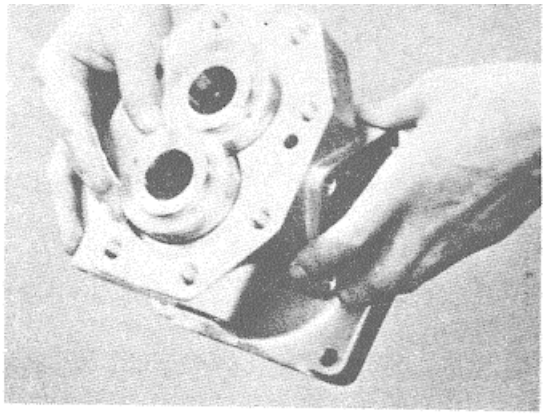


3. Remove the seal ring and support ring installed on the bushing.

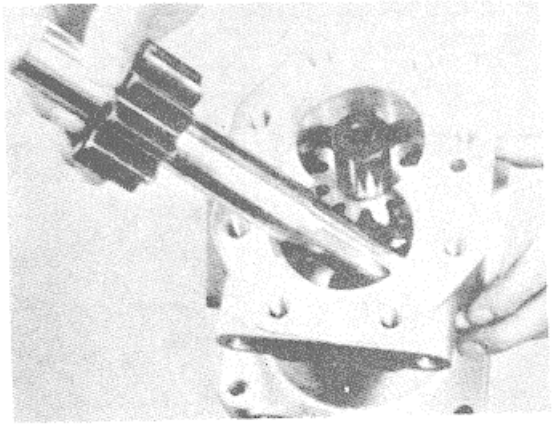


4. Wrap vinyl tape around the spline of the drive gear and use the drive gear in the pump body to remove the cover side bushing.

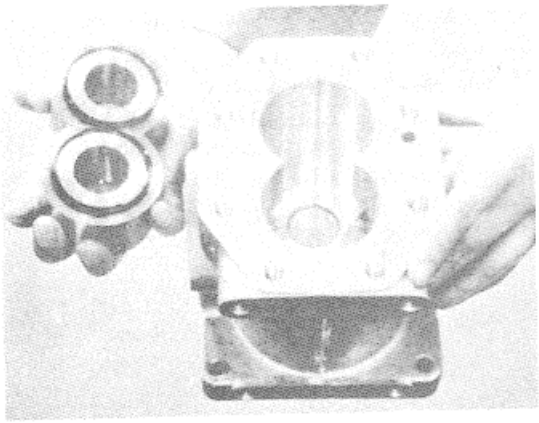
If the gears are to be reused, matchmark them to assure correct reassembly.



5. Remove the drive and driven gears.



6. Remove tie bushing and O-ring remaining in the pump body.



7. Do not remove the oil seal from the pump body if it is not damaged. When removing, use the procedure as follows:

   a. Put a clean cloth inside the pump body.

   b. Drive the oil seal out of the pump from inside to outside.

Use caution as not to damage the oil seal fitting surface on the pump body.

INSPECTION

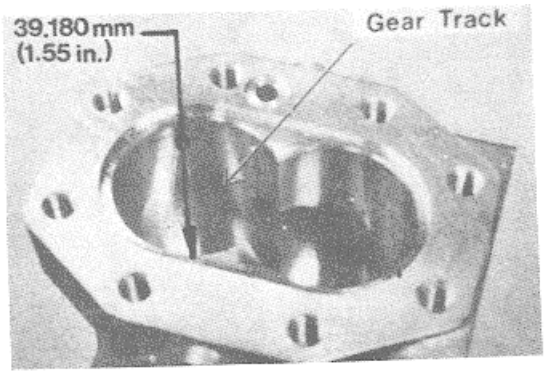
Before proceeding to inspection, thoroughly clean and dry all parts. Replace all O-rings and seal rings with new ones.

WARNING

Dry cleaning solvent P-D 680 is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area. Avoid contact with skin, eyes. and clothes and don't breathe vapors. Do not use near open flame or excessive heat If you become dizzy while cleaning with solvent, get fresh air immediately and get medical aid. If contact with skin or clothing is made, flush with water. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

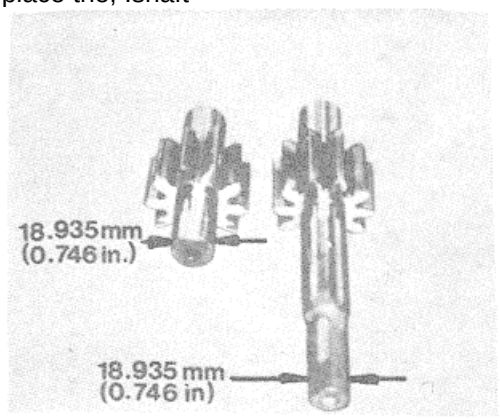
WARNING

Compressed air used for cleaning purposes will not exceed 30 PSI. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).



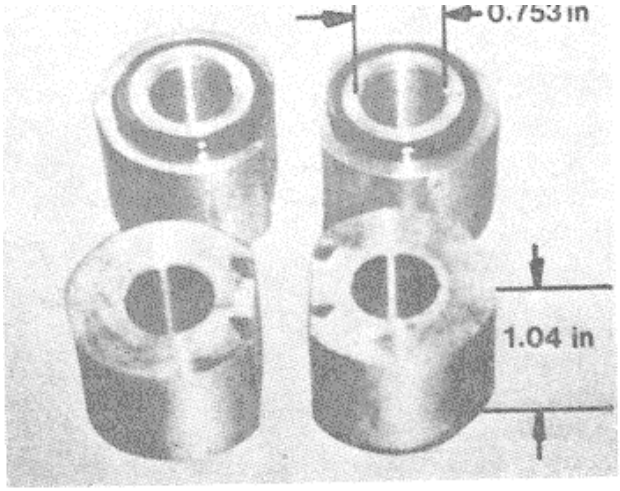
1. Check the pump body inner surface for wear or damage. If worn more than 0.05mm (0.00197 Inch), the pump will have low efficiency. Replace as an assembly.

2. Check the drive and driven gear teeth for damage. If (damaged, replace the drive and driven gears as a set. Moreover, measure the outside diameter of shaft, and if less than 18.935mri (0.746 inch), replace the, .shaft



3. Measure the overall length of bushings. If not correct replace the bushing and gear at the same time if necessary. In addition, if the shaft-to-bushing clearance is found to be more than 0.177mm (0.006968 inch), replace the bushing and gear.

   - In the case where the drive gear or driven gear is necessary to be replaced, replace them as a set only.
   - The clearance between the bushing and gear at the shaft should be within 0.005mm (0.000197 inch). If either the bushing or gear is defective, replace them' as a set only.



REASSEMBLY

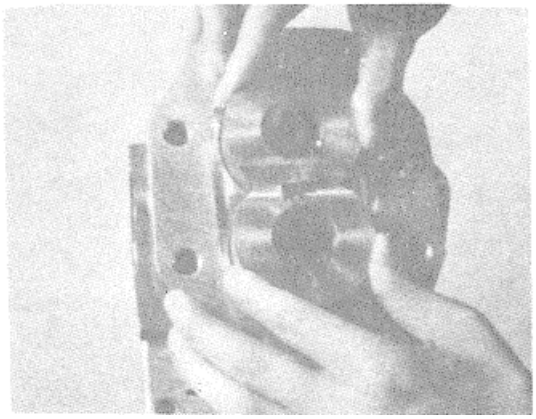
Before reassembling, make sure that all disassembled parts are clean.

1. If the oil seal was removed from the pump body, proceed as follows:

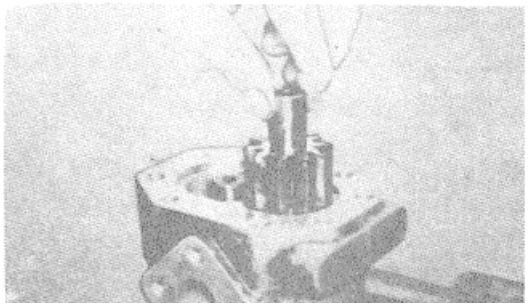
   a. Make sure there is no foreign matter or flaw on the oil seal fitting part of the pump body.

   b. Using a press, install a new oil seal with the lip inward.

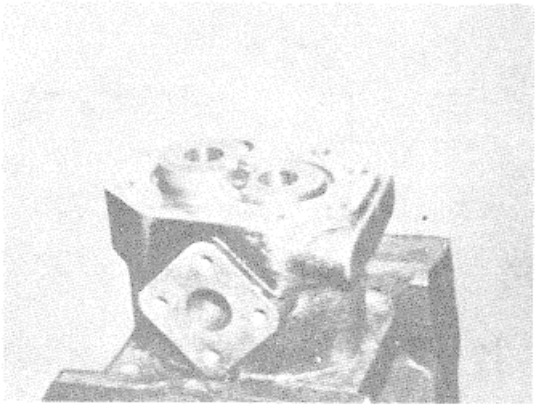
2. Apply a good quality mineral grease on new 0-rings and install these O-ring on the two bushings marked "C" on the end face. Then, install the two bushings in the pump body at the same time with the O-ring side toward the outside of the pump.



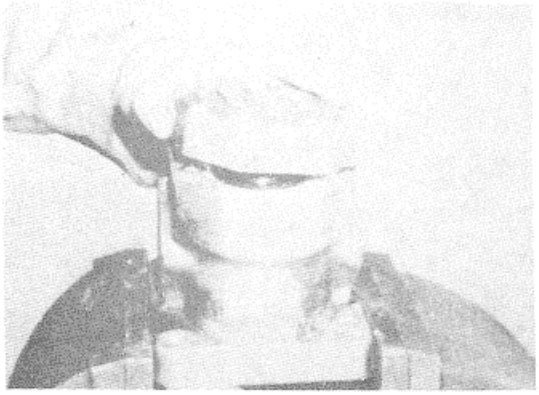
3. Wrap vinyl tape around the spline portion of the drive gear and install in the pump body. Now, install the driven gear. When the gears are reused, reinstall them, aligning the matchmarks made during the disassembly.



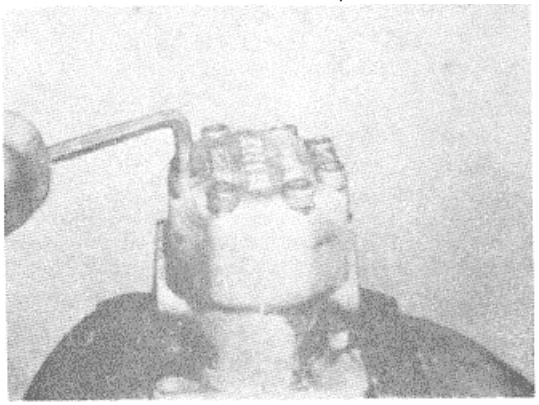
4. Install the bushing marked "A' on it, end face, in the pump body.



5. Install seal ring (with support ring) on the bushing. Install O-ring in the pump body and put the cover on the pump body, aligning the lubrication oil hole in the cover with the oil hole in the pump body.



6. Install the cover with socket head cap bolts. Tighten the bolts to the specified torque. Center punch around the bolt heads, to lock them.



7. Pour a small amount of hydraulic fluid through the inlet port and turn the shaft counterclockwise to make sure that the reassembly is correct. If the shaft turns reluctantly, recheck the unit.

TRIAL RUN

After reassembly be sure to do the following steps to assure proper break-in of pump.

CAUTION

If the temperature of the dump body rises abnormally during the trial run, put the pump in a no load condition, and after the temperature lowers to normal, resume the trial. If abnormal noise is produced from the pump, stop the trial operation and find the cause.

A. If the break-down of the pump was caused by "seizure" or undue wear of inner surface, replace the hydraulic fluid and filter.
B. Make sure that the pump correctly aligned on the engine.
C. Make sure that there are no loose connections.

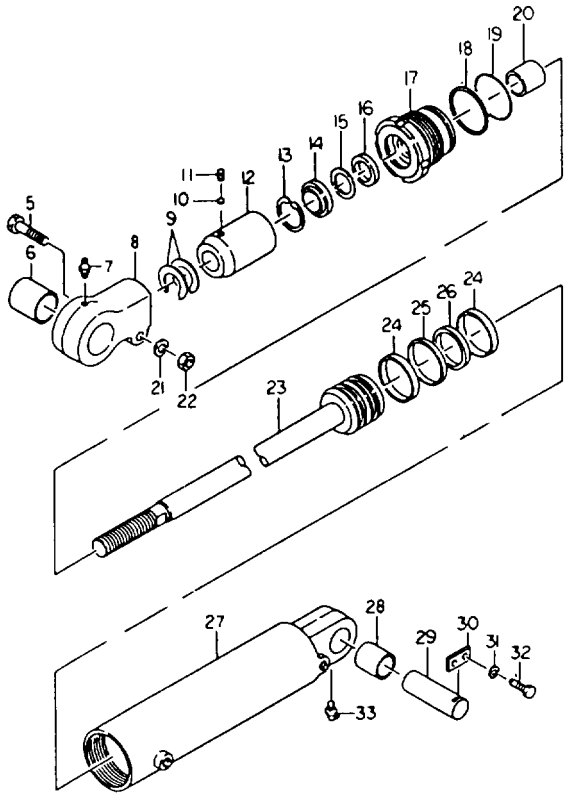
1. Install a hydraulic gauge of 3,000 psi capacity on the pressure measuring port of the control valve.

2. Leave the control valve in the neutral mode, start the engine and run at about 1000 rpm for 10 minutes.

3. Increase the engine speed up to 1500 thru 2000 rpm and keep this rpm for 10 minutes.

4. Loosen the lock nut of the relief valve and turn the set screw counterclockwise so that only two or three threads of the screw are engaged.

5. Keeping the engine speed at 1500 thru 2000 rpm, raise the pressure by 284-427 psi every 5 minutes. Repeat this procedure until the setting pressure of the machine is reached.



TILT CYLINDERS

1. To repair or replace tilt cylinder(s), first support the upright with a chain hoist in such a way that unhooking the cylinder(s) will not cause the upright to tilt. **CAUTION: Do not chain the upright to the overhead guard.**

2. Remove the key plate (Item 30) and the tilt cylinder eye pin.
3. Retract the cylinder ram.

4. With a spanner wrench unscrew the cylinder cap (Item 17) and pull the ram (Item 23) and cap as an assembly out of the cylinder tube.

5. Packing on the piston can now be replaced (Packing Kit #2445850311).

6. To replace all packing use overhaul kit instead (Part Number 24458-5981i).

7. Place rod end in a vise. Loosen the locking bolt and nut so you can freely turn the piston ram to unscrew it completely. Make sure you do not misplace the shims (Item 9).

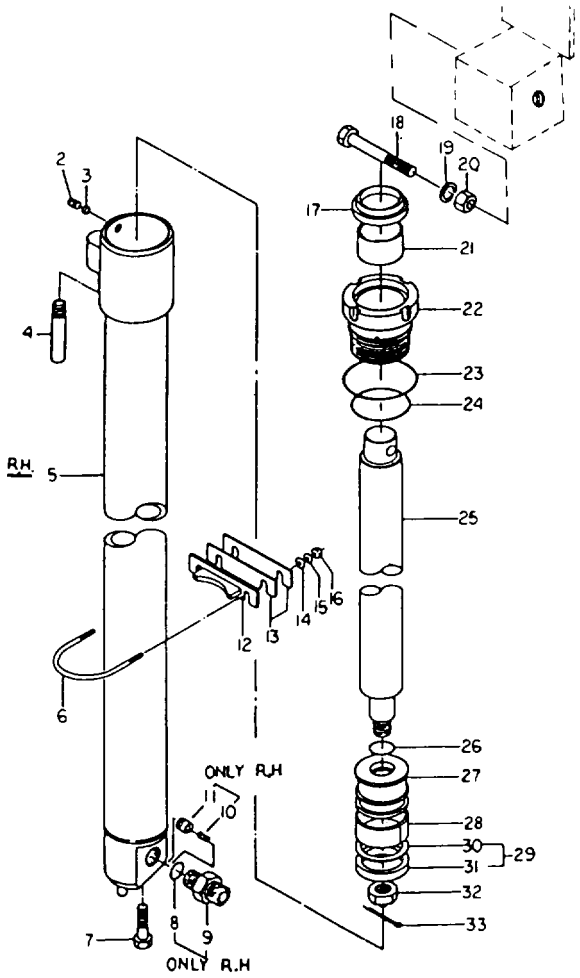
8. Loosen the set screw (Item 11) in the spacer (Item 12) so it can be removed.

9. Replace all packing and O-rings in the cylinder cap.

10. Inspect cylinder tube. If it is damaged, to replace it, unscrew the two high pressure hose connections. Take the floor board out to make it easier to get to the rear connection.

11. Remove the parallel key and pin at rear of cylinder and lift the cylinder out from the front.

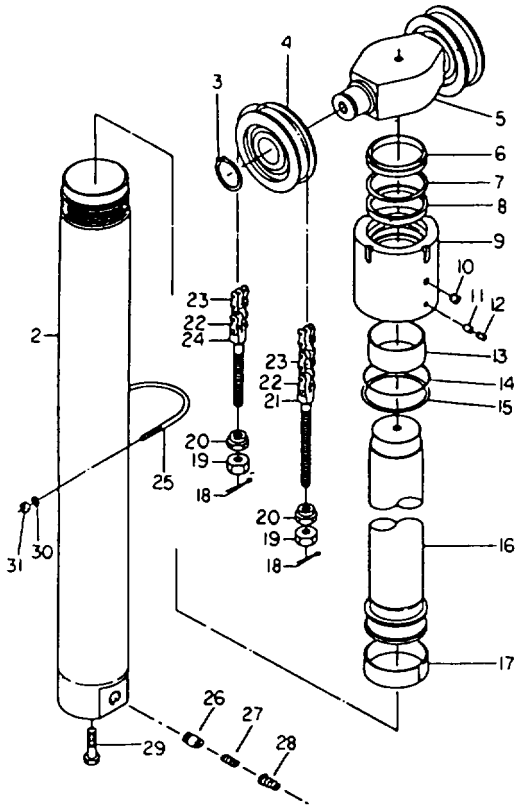
12. Reassemble in reverse order.



REAR CYLINDER

1. Jack or lift the inner channel with a chain hoist high enough to gain access to the piston head (Part Number 24450-70401). This is the same procedure as #8 of "Replacement of Upright Rollers". NOTE : Inner channel will raise simultaneously.
2. Securely block middle channel in this position. Inner channel should then be raised slightly higher and blocked to release the chain tension.
3. Now unbolt piston head and lower it while still connected to rear cylinder rams. Wire the chains up out of the way.
4. Remove bolts holding rams to piston head and remove piston head.
5. Remove hose guard from the front to gain access to the high pressure hose between the two rear cylinders. Remove the hose.
6. Secure cylinders by rope or chain and remove the bottom set bolts and the U-bolts.
7. Release the rope or chain one cylinder at a time and lift the cylinder straight up and out of the upright.
8. Loosen set screw (Item 2, Part Number 22298-40111) and remove cylinder cap (Item 22, Part Number 24459-42261).
9. Replace repair kit parts (Part Number 24459-49801) by pulling the lift cylinder ram out of the cylinder for access to these parts. Take the piston (Item 27, Part Number 24459-42281) off the ram by removing the castled nut (Item 32) to gain access to the "O"-ring between the piston and ram.
10. Inspect the condition of the cylinder walls for scratches or grooves. Repair or replace all parts as necessary.
11. Reassemble in reverse order.

LIFT CYLINDER
REPLACEMENT/REPAIR



FRONT CYLINDER

1. Follow steps 1 through 6 in "Replacement of Upright Rollers", to remove carriage.

2. Hold control valve lever (for lift and lower) forward to make sure all the hydraulic oil is out of the lift cylinders.

3. Take off high pressure hose at the connecting elbow (Part Number 78260-69234).

4. Remove set bolt (Item 29) from bottom of cylinder support.

5. Secure cylinder with rope or chain in its original position. Remove "U"-bolt (Item 25) being careful not to loosen shims. Release rope or chain as you remove cylinder.

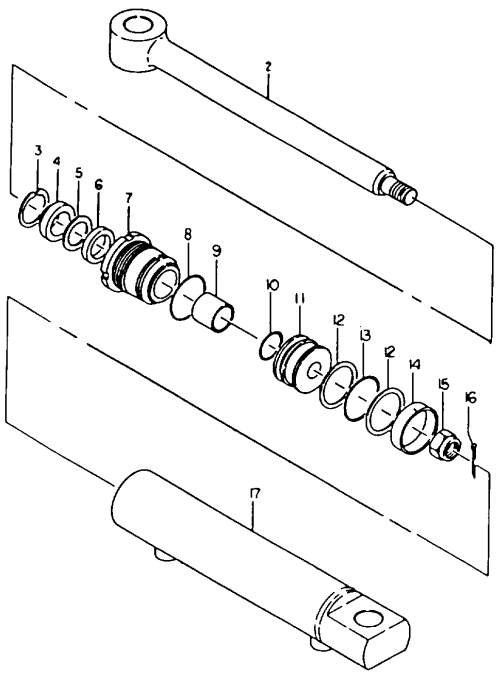
6. Loosen set screw (Item 12, Part Number 22298-40111) and then unscrew cylinder cap (Item 9, Part Number 24450-82221) with a spanner wrench.

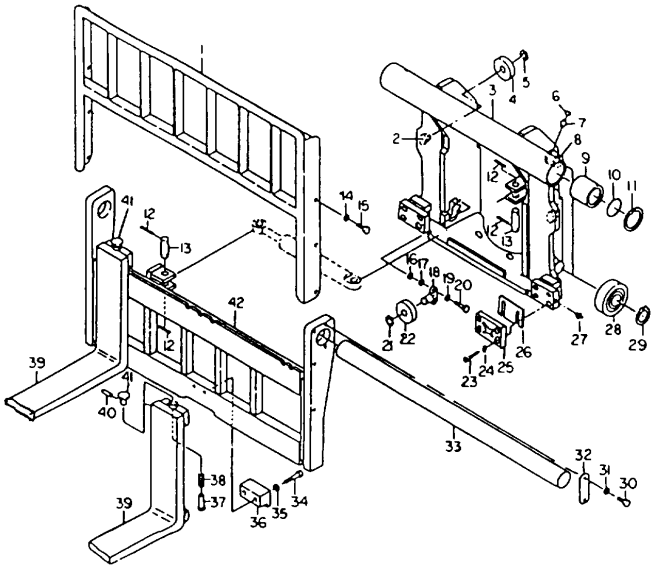
7. The packing kit (Part Number 24450-89801) pieces in the cap can now be replaced as necessary. Examine the bushing for scoring or wear and press out and replace (Part Number 23910-22111) if necessary.
8. There is a wearing (Item 17, Part Number 23918-52131) around the machined piston area of the ram. Pull the ram out to examine and replace as necessary.
9. While the ram is out of the cylinder, examine the cylinder walls for any scratches or grooves. Repair or replace as necessary.
10. Reassemble in reverse order.

SIDESHIFT CARRIAGE

CYLINDER & WEAR PLATE REPLACEMENT

1. Make sure the hydraulic pressure is released by moving the sideshift control valve back and forth several times.
2. Remove forks and LBR.
3. Remove both hydraulic lines from the sideshift cylinder.
4. Remove the cylinder pins and remove cylinder for access to internal parts.
5. Unscrew cylinder cap (Item 7) with spanner wrench and remove together with piston ram (Item 2).
6. Remove cotter pin (Item 16) and nut (Item 15) from end of ram so that piston (Item 11) can be separated from ram and ram can be taken out of cylinder cap. Replace all software as necessary.
7. Check inside cylinder tube (Item 17) for scratches or grooves; repair or replace as necessary.
8. Reassemble cylinder.
9. To replace lower wear bushing and upper guide bushings, unbolt and remove lower guide (Item 36, Part Number 62016-12251).
10. Support finger-bar with a chain-hoist and then remove stopper (Item 32, Part Number 7826069218).
11. Now drive out guide shaft (Item 33. Part Number 62016-12222) and lift finger bar out of the way.
12. Lower wear bushing can unbolted and replaced, and upper guide bushings can be pulled out of guide tube and new ones pressed in as necessary.
13. Replace O-ring in bushing and reassembly in reverse order being sure to grease all points.





STEERING SYSTEM

Steering System:	
Type:	Rear-wheel steering with power steering
Power Steering:	
Type:	Semi-integral type
Steering Gear:	
Type:	Recirculating ball nut type
Name:	
Reduction Ratio:	18.5: 1
Pitman Arm Working Angle:	74.5°
Steer Handwheel Dia.:	380 mm (15 in)
Power Steering Cylinder:	
Type:	Double acting
Cylinder Bore:	50 mm (1.97 in)
O.D. of Cylinder Rod:	22.4 mm (0.88 in)
Stroke:	240 mm (9.1 in)
Flow Divider:	
Set Pressure:	70 kg/cm2 (1000 psi)
Set Flow Rate:	10 £/min (2.6 US gal)

GENERAL DESCRIPTION

The steering system is a rear-wheel steering type with a hydraulic booster, which consists of steering gear, power cylinder and flow divider.

STEERING GEAR

The steering gear is a semi-integral type being composed of a recirculating ball nut, worm and a steering valve.

The worm and ball nut are both hardened and ground precisely to have the grooves (internal/external) of special cross section. The steel balls are packed in the screw grooves between the ball nut and worm to convert sliding friction force of the worm and ball nut into rolling friction force of steel balls, providing smooth, easy action of the steer handwheel. As the steering shaft turns, the steel balls roll between the worm and ball nut unitl they reach the end of the ball nut, then return to the inlet of the ball nut, guided through the ball tube. At the bottom of the steering gear case is installed a steering control valve to control oil flow for the steering cylinder.

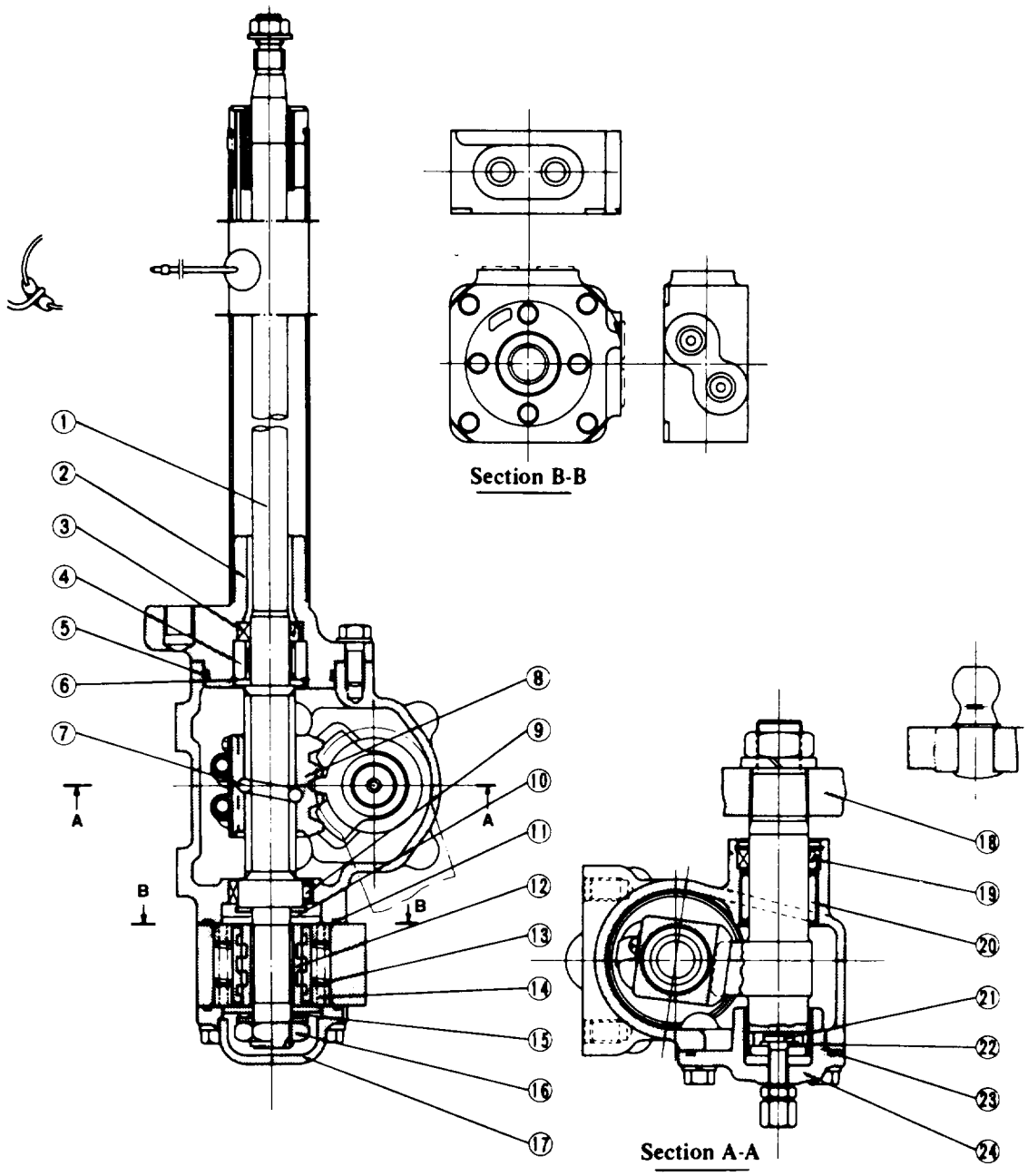


Fig. 4-421 Steering gear

1. Steering shaft
2. Rear cover
3. Oil seal
4. Needle bearing
5. O-ring
6. Snap ring
7. Steel ball
8. Ball nut
9. Needle bearing
10. Thrust bearing
11. O-ring
12. Spool
13. Reaction spring
14. Reaction piston
15. Thrust bearing
16. Nut
17. Bottom cover
18. Pitman arm
19. Oil seal
20. Needle bearing
21. Adjusting bolt
22. Shim
23. O-ring
24. Side cover

The sector shaft, supported by the bushing fitted to the side cover and the needle bearing fitted to the gear box, is installed on the steering shaft at a right angle to the worm. At the center of the side cover is the adjusting screw to adjust engagement of the ball nut rack and sector gear. On the other side of the sector shaft is a tapered serration to which the pitman arm is installed with a nut.

The control valve consists of a valve housing, spool, spring and reaction piston. The grooves on the inner periphery of the valve housing and the outer periphery of the spool serve to control the oil flow. The spool is installed at the lower part of the steering shaft by a thrust bearing with a nut.

(1) **Hydraulic Operation Principle**

(a) Steer handwheel at straight position. When the steer handwheel is in the straight position, the control valve is in the neutral position by operation of centering springs (8) and (36) as shown in Fig. 4-22 In this case, the oil discharged from the hydraulic pump flows through the control valve into the tank, resulting in no pressure to be applied on the power steering cylinder.

(b) When the steer handwheel is turned left: When the steer handwheel is turned left, the pitman arm does not move if the steering force is small, due to resistance of the truck body applied on the pitman arm, (ball nut (41) is also locked,) so that worm shaft (40) rotates counterclockwise moving in such a direction that the steering handwheel sinks (the centering spring is contracted.) With the movement of the worm shaft, the steering control valve is actuated to allow oil passages B and D to open and A and C to close so the oil flow route is determined. The pressure oil from the pump, thus, flows through oil passage B of the control valve to the power steering cylinder. Meanwhile, the oil discharged from the power cylinder passes through oil passage D of the control valve, returning to the tank. When the steer handwheel stops to turn, the worm shaft is pushed back by the centering spring, placing the spool in the neutral position so the control valve is put in "Straight Travel" position as shown in Fig. 4-422

(c) When the steer handwheel is turned right: The steering operation principle is the same as in Step (b): As the handwheel is turned right, the worm shaft is pushed upwards to close oil passages B and D and open oil passages A and C, thus allowing the truck to turn to the right.

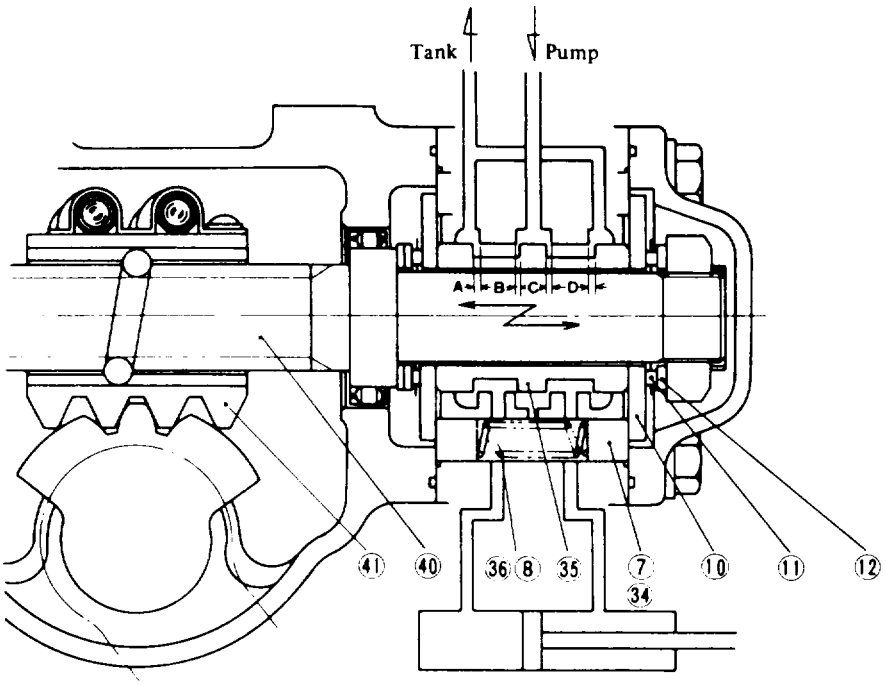


Fig. 4-422. Control Valve In Neutral

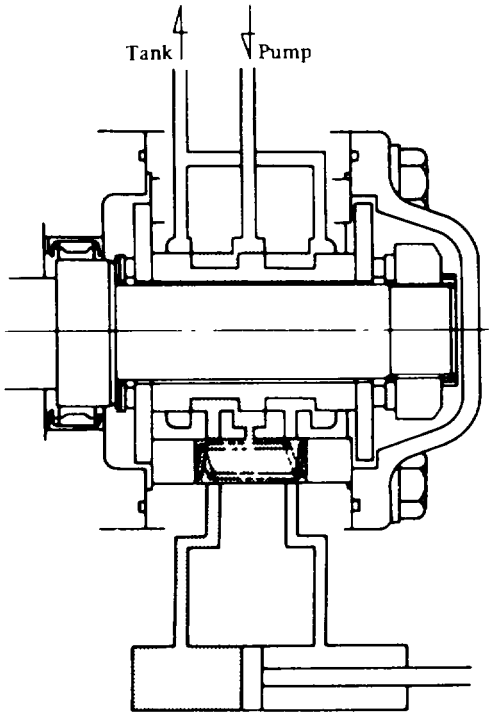


Fig. 4-423. Steer Handwheel Turned Left

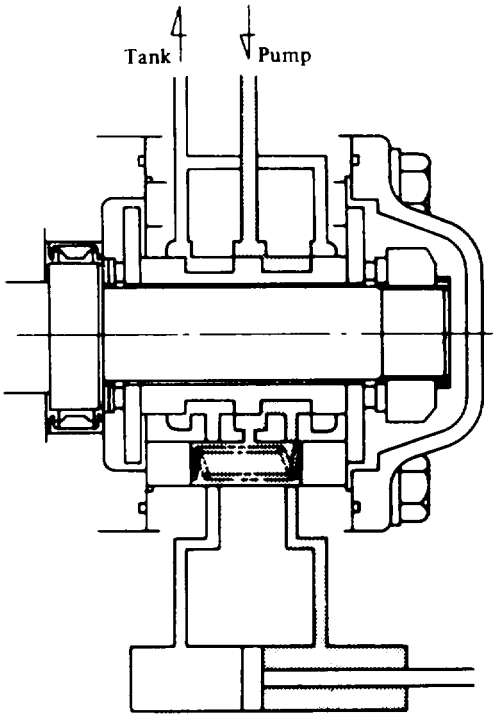


Fig. 4-424. Steer Handwheel Turned Right

STEERING CYLINDER

The steering cylinder is the double-acting type. The ball joint of the cylinder side is fitted to the frame while the piston rod side ball joint is fitted to the center arm of the rear axle. The cylinder tube and ball socket are of the screwing type, so the replacement is easy. The cylinder tube has a box at the piston rod side to support the piston rod. The fluid leaving the control valve of the power steering flows into the cylinder from the inlet port, extending the piston rod. This motion of the piston rod steers the machine.

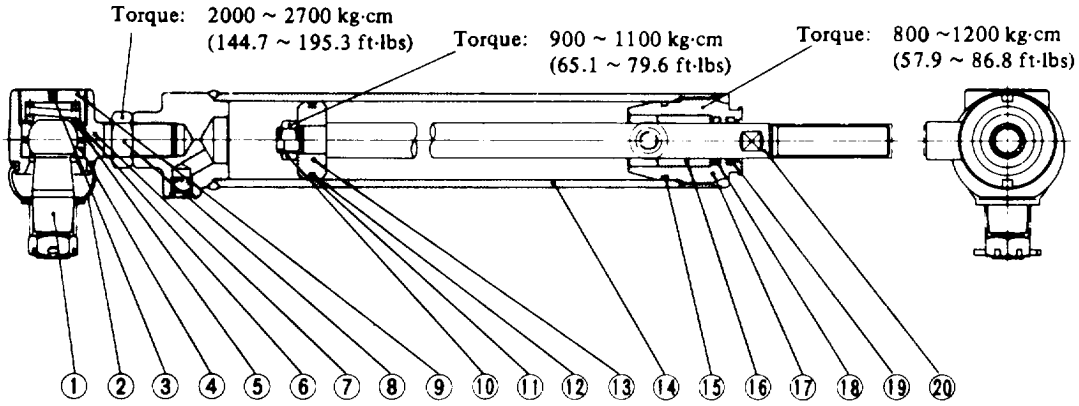


Fig. 4-425. steering Cylinder

1. Ball stud
2. Boot
3. Cotter pin
4. Ball seat
5. Ball seat
6. Spring
7. Ball joint
8. Lock nut
9. Screw
10. Lock nut
11. Slipper seal
12. O-ring
13. Piston
14. Cylinder
15. O-ring
16. Bushing
17. Cylinder cap
18. Packing
19. Dust seal
20. Piston rod

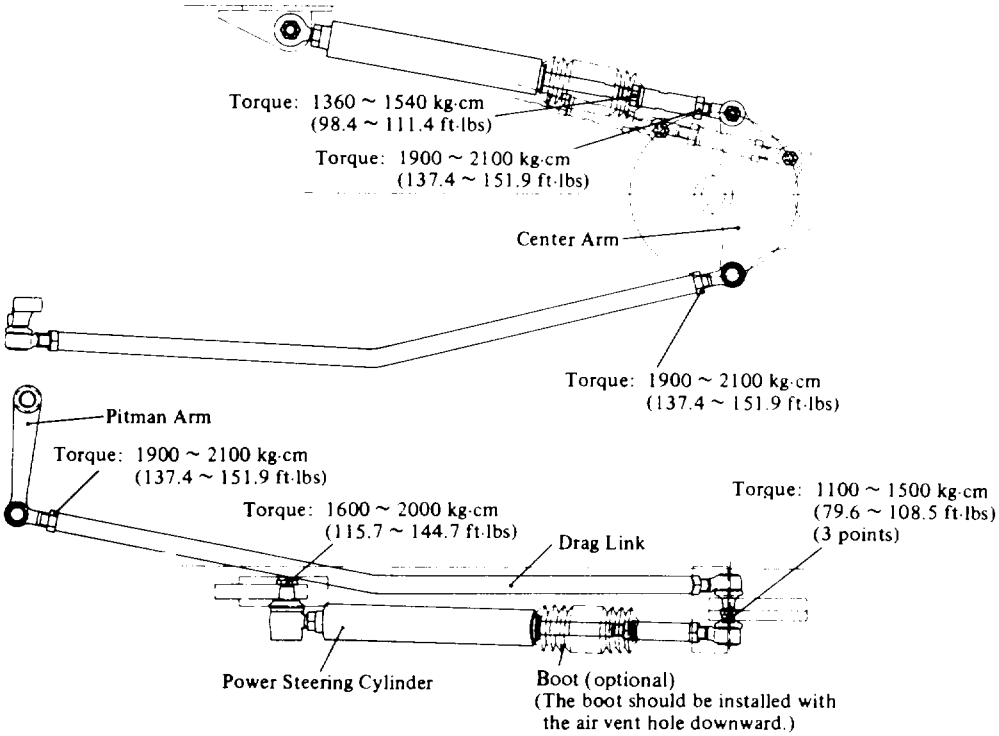


Fig. 4-426. Steering Cylinder Installation

DISASSEMBLY OF STEERING GEAR BOX

(1) Place the steering gear box in a vice, clamping its bracket section.

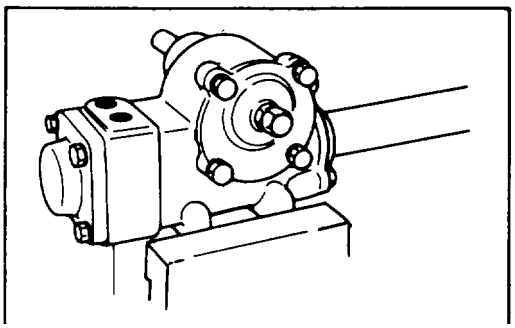


Fig. 4-427.

(2) Remove the bolt securing the side cover, and remove the adjusting screw cap nut and lock nut. Turn the adjusting screw clockwise and remove the side cover. Remove the adjusting screw and shims from the sector shaft.

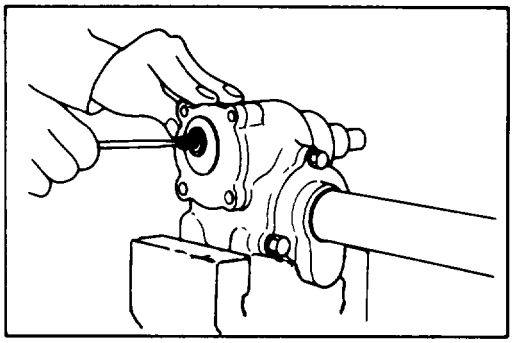


Fig. 4-428.

(3) Turn the steering shaft so that the sector shaft is positioned as shown in Fig. 6-16. Lightly tap the serration side by hand to remove the sector shaft.

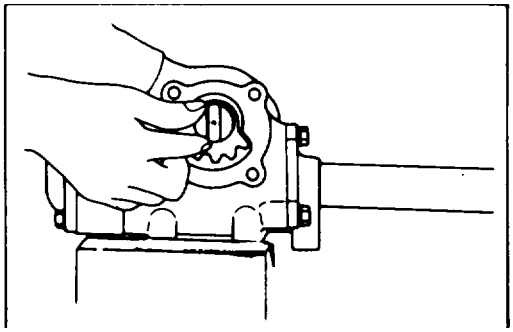


Fig. 4-429.

(4) Remove the bottom cover.

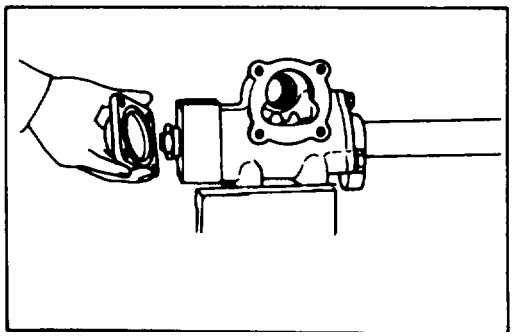


Fig. 4-430.

(5) Lightly tighten the valve body with two bottom cover fitting bolts. Raise the caulked part of the lock nut. Holding the steering shaft, remove the lock nut.

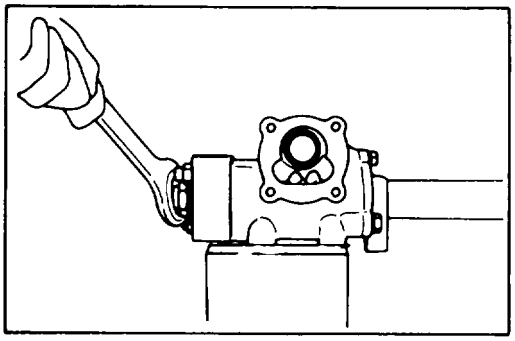


Fig. 4-431.

(6) Remove the two bolts which were hand tightened in the preceding step, and remove the control valve. Care should be taken to prevent the reaction spring seat, reaction spring and reaction piston from popping out.

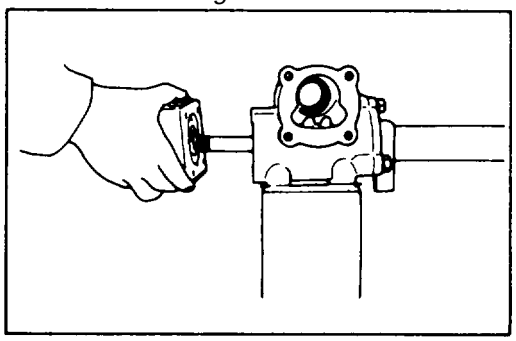


Fig. 4-432.

(7) Remove the top cover fitting bolts and remove the top cover.

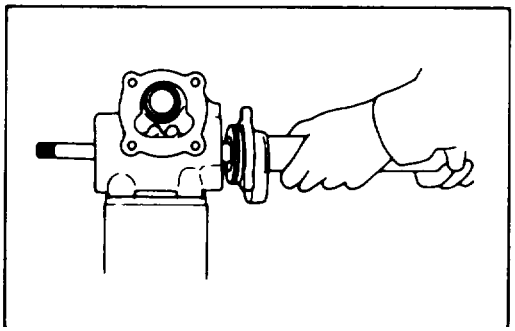


Fig. 4-433.

(8) Remove the worm assembly from the gear box. The worm assembly must be kept horizontal. Never disassemble it.

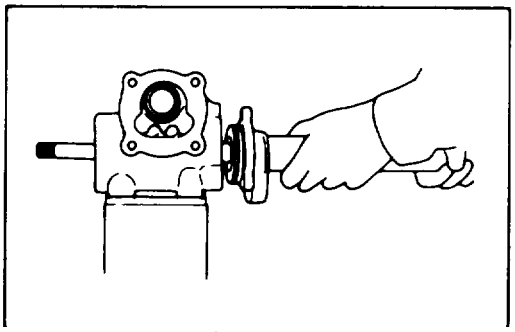


Fig. 4-434.

INSPECTION

After disassembly, clean all parts and follow the procedures below. below.

(1) Check to see if the control valve spool and reaction piston moves smoothly.
(2) Inspect the sector shaft, needle bearing, and thrust bearing for wear or cracks.
(3) Inspect the worm assembly to be certain that the ball screw, groove is free from undue wear and damage and that it operates properly.

ASSEMBLY OF STEERING GEAR

Reassembly of the steering gear should be made in reverse order of disassembly.
Follow the procedures given below.

(1) Before assembly, thoroughly clean all parts, by a safe method.

(2) Prior to assembling of the top cover, apply grease on the oil seal lip and O-rings.

(3) Tighten the top cover fitting bolts to a torque of 450 to 550 kg-cm (32.5 to 40 ft-lbs).

(4) When installing the top cover side thrust bearing, fit the smaller diameter race first. In the case of the bottom side thrust bearing, the larger diameter race should be installed first.

(5) The O-ring of gear box should be held in place with grease.

(6) When installing the spool, lock the valve body provisionally, and adjust the starting torque of the steering shaft at 2 to 5 kg-cm (0.14 to 0.36 ft-lbs) by using the lock nut.

(7) After adjustment of starting torque, caulk the lock nut at the notch of steering shaft (2 parts) (8) Tighten the bottom cover fitting bolts to a torque of 400 to 500 kg-cm (29 to 36 ft-lbs).

(9) Position the sector shaft as shown in Fig. 6-16.

(10) When installing the adjusting screw on the T-groove of sector shaft, use shims to minimize looseness between the T-groove and the adjusting screw.

(11) Adjust the pre-load of the sector gear with the adjusting screw so that the steering shaft gets a starting torque of 3 to 8 kg-cm (0.22 to 0.57 ft-lbs).

(12) Tighten the lock nut and cap nut of adjusting screw to a torque of 300 to 450 kg-cm (22 to 33 ft-lbs).

(13) After assembly, proceed to inspection in the following manner.

(a) Rotate the steering shaft to be certain that it rotates without any interference.

(b) Rotate the steering shaft clockwise and anti-clockwise to be certain that the sector shaft has an operating angle of over 74.5°

(c) When the steering shaft is further turned past the lock position, it should shift in the axial direction by one or two mm (0.04 or 0.08 ft). Also check to see if it automatically returns into the original position when removing your hand.

(d) If checks are unsatisfactory, disassemble the steering gear box and repair.

DISASSEMBLY OF POWER STEERING CYLINDER

(1) Hold the power steering cylinder by a vice.

Note: Place pieces of wood between the vice jaws and the cylinder. Do not overclamp the cylinder.

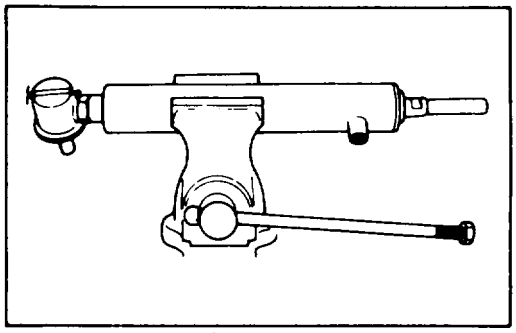


Fig. 4-435.

(2) Raise one of the caulkings locking the cylinder cap and remove the cylinder cap with a hook spanner. At this time, it is a good practice to wrap vinyl tape around the piston rod threaded part to prevent the oil seal lip from being damaged.

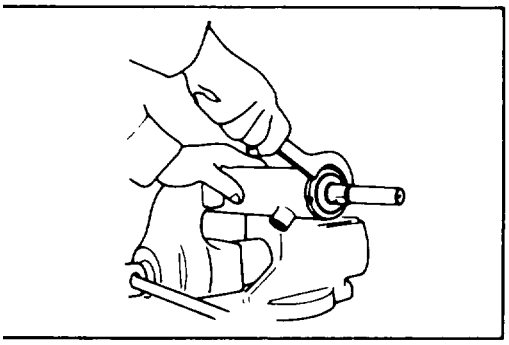


Fig. 4-436.

(3) Remove the piston rod from the cylinder. Do not separate the piston and rod.

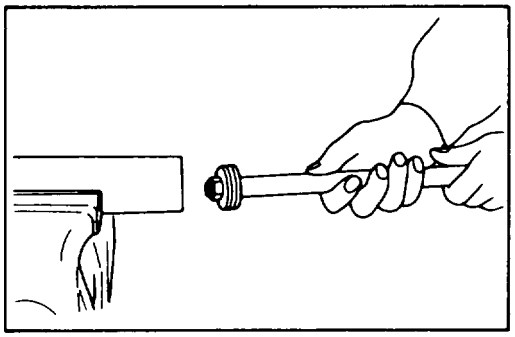


Fig. 4-437.

(4) Loosen the lock nut and remove the ball joint.

Note: It is not necessary to remove the ball joint assembly, if it is in good condition.

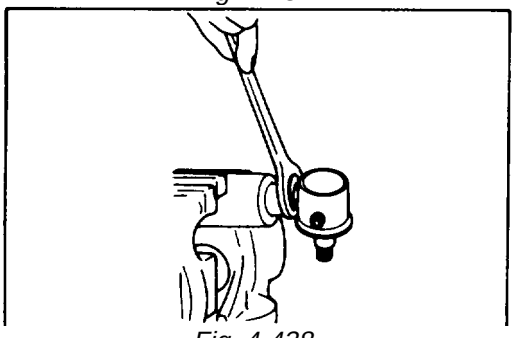


Fig. 4-438.

(5) Disassembly of Ball joint (a) Remove the boot and cotter pin, and then the engine cover.

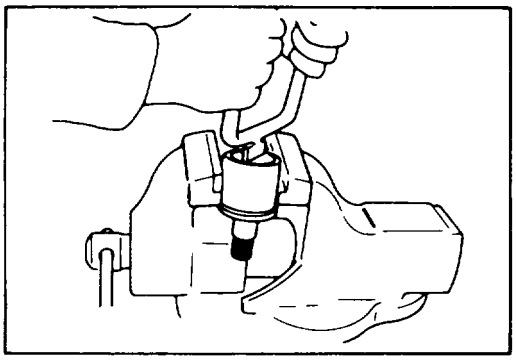


Fig. 4-439.

(b) Remove the spring, upper bearing and ball stud.

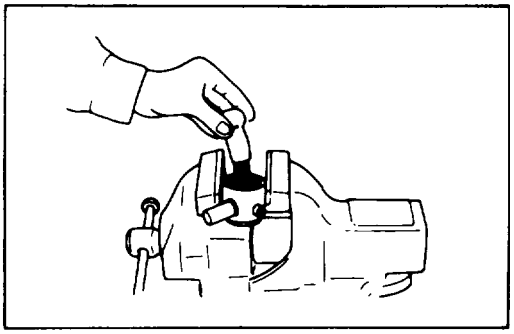


Fig. 4-440.

ASSEMBLY OF POWER STEERING CYLINDER

Reassembly of the power steering cylinder is performed in the reverse order of disassembly. Before proceeding to reassembly, inspect all parts for defects and replace with new ones, if defective.

(1) Clean all parts with cleaning oil and use caution to keep them free from foreign matter.
(2) Apply grease (ALBANIA No. 2 or equivalent) on O-rings, U-packings, dust seals and boot seals.
(3) Apply grease (ALBANIA No. 2 or equivalent) in the ball joint housing.
(4) After tightening the ball joint end cover to a torque of 1 kg-m (7 ft-lbs), turn it back to the first position which allows cotter pin insertion.
(5) When inserting the piston rod through the cylinder cap, care should be exercised not to damage the piston rod threaded part. It is a good practice to wrap vinyl tape around it.
(6) Tighten the cylinder cap to a torque of 8 to 12 kg-m (58 to 87 ft-lbs).
(7) One of the two cylinder cap grooves has not been caulked yet. In this step, caulk this point. Do not re-caulk the parts which were caulked before disassembly.

REAR AXLE

Axle:	
Type:	Center-pin supported, Elliot type
Steering Angle:	
Inner wheel:	810
Outer wheel:	56.50
King Pin:	
Spacing:	660 mm (26.0 in)
Tilt:	0°
Swivel Radius:	97.5 mm (3.84 in)
Camber:	1°
Caster:	0°
Toe-in:	0 mm (O in)
Trail	0
Wheel:	
Tire:	6.50 x 10 -10 ply
Rim:	10/2 x 5 in

GENERAL DESCRIPTION

The rear axle is of the welded construction with a box-shaped cross section, consisting of an axle, center arm, tie rods and knuckles. The rear axle supports with bushings fitted thereto are fitted into the front and rear support pins of the axle body and bolted to the rear frame, so that the rear axle can be cradled around the support pins.

At each end of the axle is a knuckle, which turns right and left on the king pin. The rear wheel hub is installed on the knuckle spindle with two tapered roller bearings, and the wheel is installed on the hub with hub bolts and nuts. The king pin side tapered roller bearing has a single-sided seal to secure grease tightness between the hub and knuckle. The king pin and center arm have grease nipples through which grease is applied. Application of grease at specified intervals will prevent premature failure caused by the lack of grease.

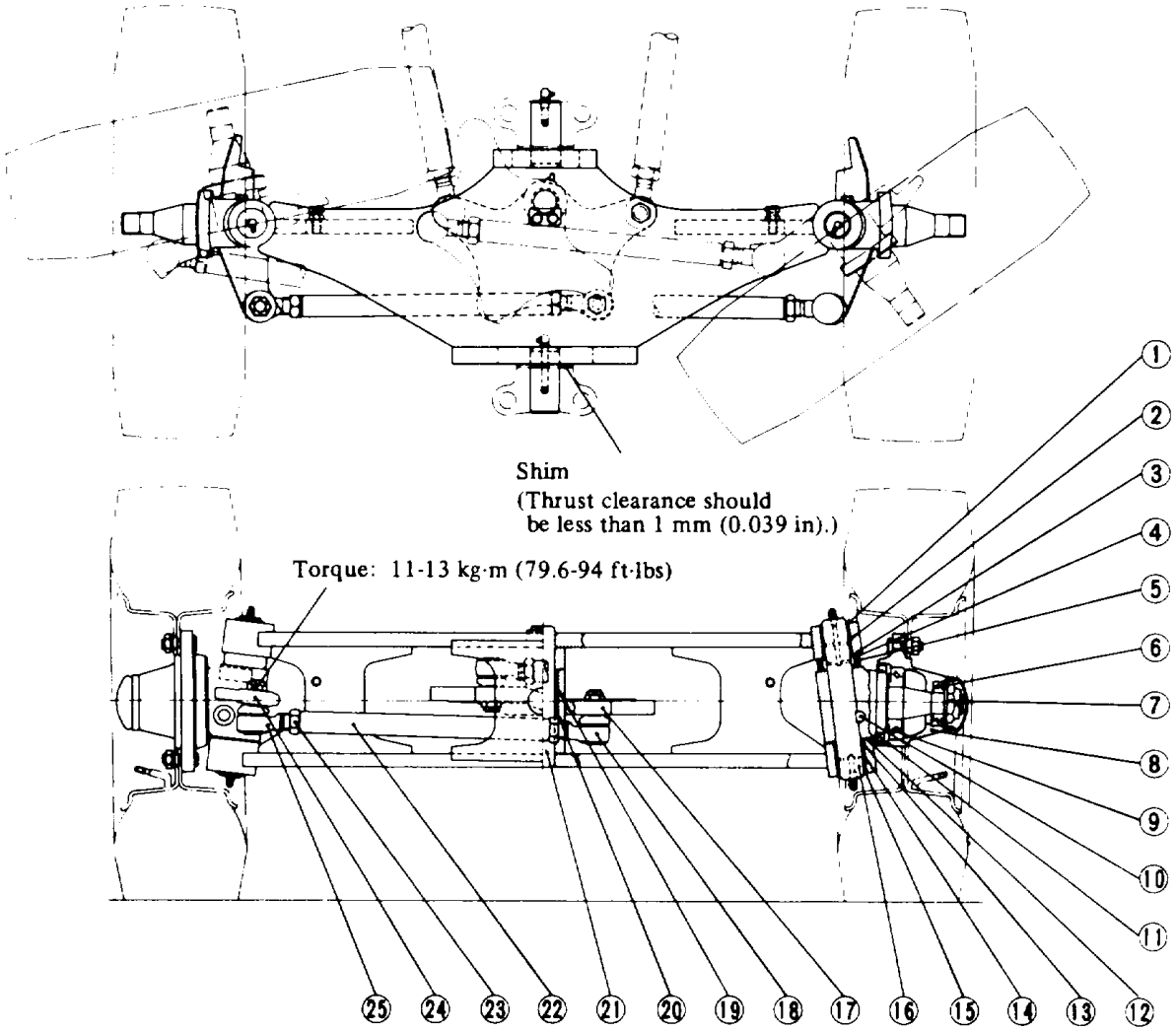


Fig. 4-441. Rear Axle

1. Oil seal
2. Needle bearing
3. Oil seal
4. Spacer
5. Thrust bearing
6. Taper roller bearing
7. Lock nut
8. Hub
9. Taper roller bearing
10. Lock pin
11. Oil seal
12. Shim
13. O-ring
14. Needle bearing
15. Oil seal
16. Kingpin
17. Center arm
18. Ball socket
19. Needle bearing
20. Needle bearing
21. Center arm pin
22. Tie rod
23. Lock nut
24. Knuckle
25. Ball socket

• Rear Wheel Bearing Pre-load Adjustment

(1) As shown in Fig.4-442, apply grease on the hub, inner bearing, outer bearing and cap. Also apply grease on the lip of the oil seals.
(2) Set bearings on the hub and install the hub on the knuckle spindle.
(3) Put plain washer and tighten the castle nut to the torque of 21-24 kg.m (151.9-173.6 ft.lbs). Back off the castle nut then retighten to the torque of 1 kg.m (7.2 ft.lbs).
(4) Lightly tapping the hub with a wooden hammer, rotate the hub 3 to 4 turns to make certain there is no looseness.
(5) Tighten the castle nut to the position which allows the cotter pin to be set.
(6) Tapping the hub with a wooden hammer, rotate the hub 3 to 4 turns to secure smooth rotation and measure the starting torque. Starting torque: 0.3-0.8 kg.m (2.2-5.8 ft.lbs)
(7) When the starting torque is over the specified one, replace plain washer and castle nut.
(8) After the specified starting torque is obtained, lock the castle nut with cotter pin.
(9) Put grease in the cap and drive it into the hub.

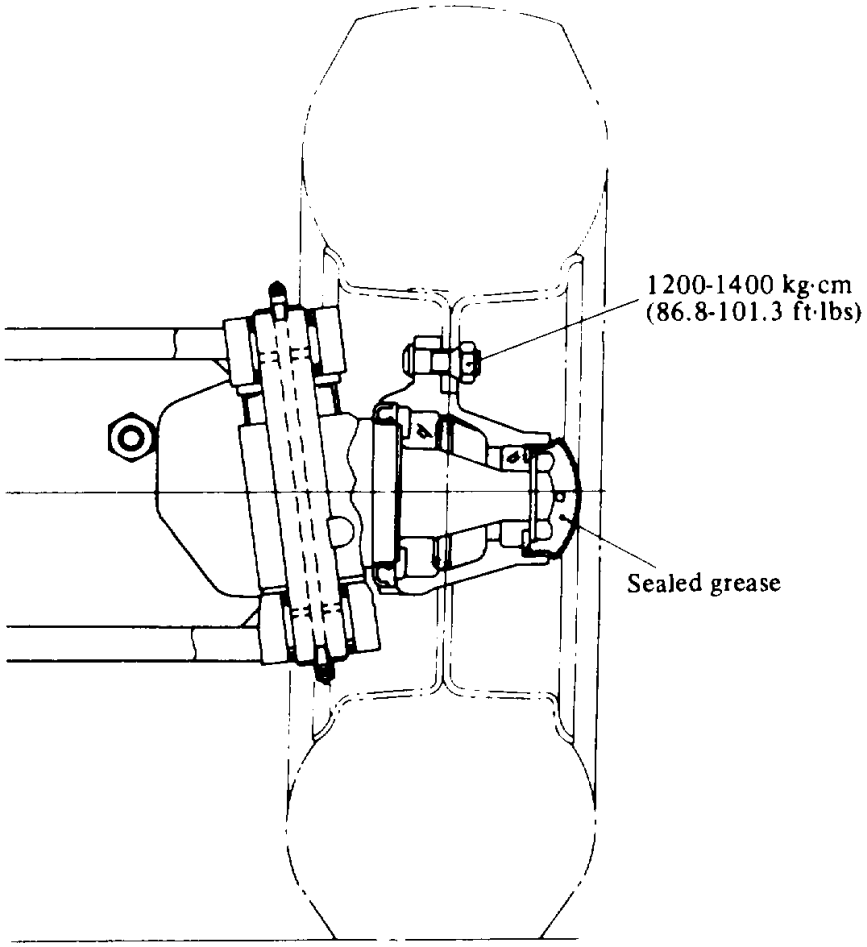
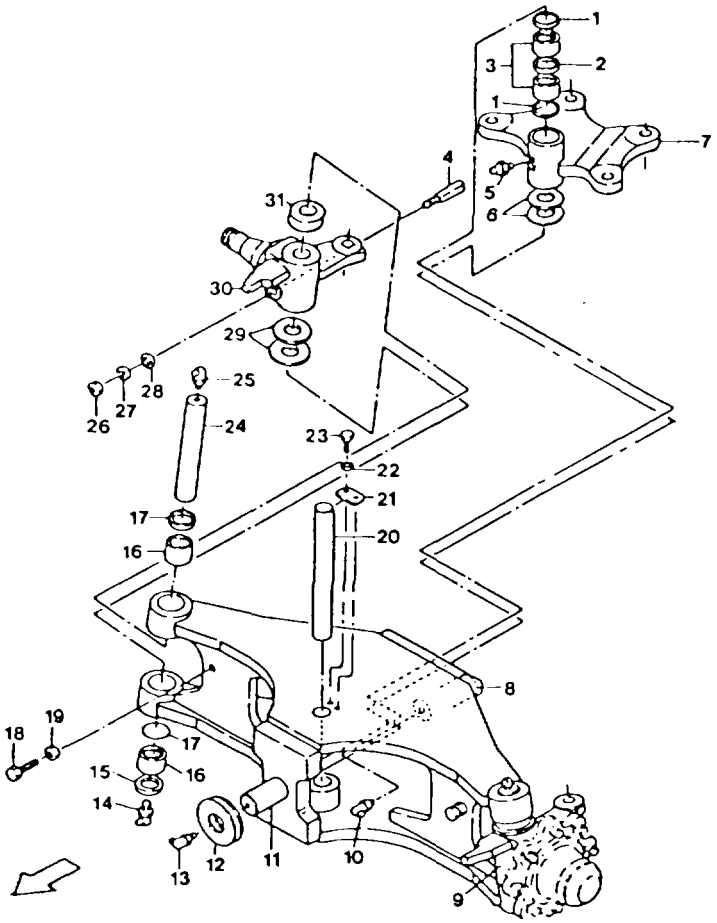


Fig. 4-442. Pre-load Adjustment



Steering wheel turns but truck does not steer:

1. Check all mechanical connections to see that nothing is disconnected or broken.
   a. chock drag link
   b. check center steering pin
   c. check tie rods and tie rodends

Steering wheel is hard to turn or will not turn:

1. Check hydraulic pump pressure at flow divider valve check port. Pressure should be 1,000 psi, with wheel turned full left or right.
   a. Pressure low, check hydraulic system pressure for possible bad pump.
   b. Pressure in hydraulic system okay, replace flow divider.

2. Block rear of truck off the ground so steer axle is free.
   a. Check for mechanical binding or interference.
   b. Check king pin bearing play by lifting bottom of each wheel while pushing in on the top.
   c. Correct any binding or loose fits.

Noise in steer axle:

1. Block rear of truck off the ground so steer axle is free.
2. Pivot axle to check for freedom in trunion bushings.
3. Rotate wheels to check wheel bearings.
4. Check center arm for freedom in center pin bearings but no side play.

BRAKE SYSTEM

Type:	Front two-wheel braking, internal expansion, hydraulic type
Pedal Ratio:	5.5
Master Cylinder:	
Type:	Conventional type
Cylinder Bore:	19.05 mm (0.75 in)
Wheel Brake:	
Type:	Duo-servo type with parking brake
Wheel Cylinder Bore:	28.58 mm (1.125 in)
Lining Size:	76 mm x 8 mm x 348 mm
Width x Thickness x Length:	(2.99 in x 0.32 in x 13.70 in) x 4 pcs.
Surface Area:	264 $_{cm2}$ x 4 (40.92 $_{in2}$ x 4)
Inner Dia. of Brake Drum:	314 mm (12.36 in)
Parking Brake:	Front two-wheel braking, internal expansion, mechanical type

GENERAL DESCRIPTION

The brake system is the front two -wheel braking type consisting of a master cylinder, wheel brakes and a brake pedal.

MASTER CYLINDER

The cylinder contains a valve seat, check valve, return spring, primary cup, separator, piston, and secondary cup, which are all held in place with a stop washer and a stop wire. The exterior of the cylinder is protected from dust by means of a rubber dust cover.

The piston is actuated through the push rod by operation of the brake pedal as follows: as the brake pedal is pressed, the push rod pushes the piston forwards.

The brake fluid in the cylinder flows back to the reserve tank through the return port until the primary cup blocks up the return port. After the primary cup passes the return port, the brake fluid in the cylinder is pressurized and opens the check valve, flowing through the brake lines to the wheel cylinders. Thus, each wheel cylinder piston is forced outwards. This brings the brake shoes into contact with the brake drum and slows or stops the truck. Meanwhile, the cavity caused behind the piston is filled with brake fluid led through the return port and inlet port to lubricate the piston. When the brake pedal is released, the piston is forced back by the return spring. At the same time, the brake fluid in each wheel cylinder is pressurized by the force of the brake shoe return spring, thus returning into the master cylinder through the check valve. When the piston returns to its original position, the fluid in the master cylinder flows into the reserve tank through the return port. The brake fluid in the brake lines and wheel cylinders has a residual pressure proportioned to the set pressure of the check valve, which makes each wheel cylinder piston cup securely seated to prevent oil leakage and eliminates a possibility of vapor lock when the truck is sharply braked.

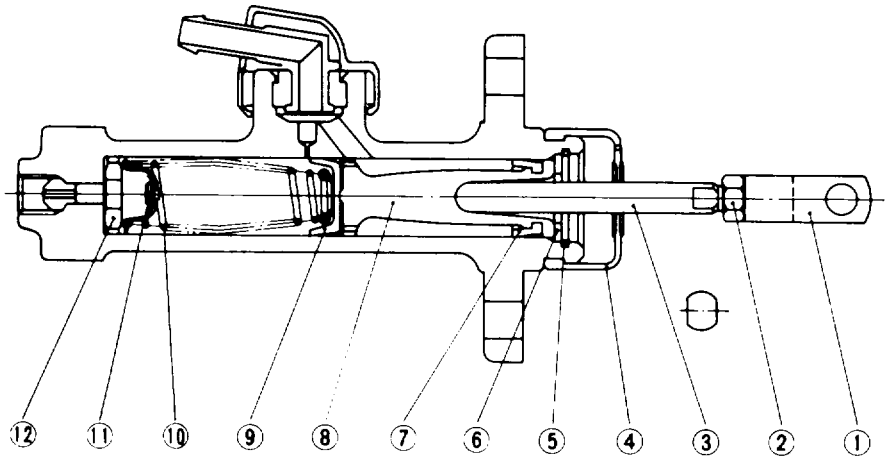


Fig. 4-443. Master Cylinder

1.	Yoke	4.	Dust cover	7.	Secondary cup	10.	Spring
2.	Lock nut	5.	Stop wire	8.	Piston	11.	Check valve
3.	Push rod	6.	Stop washer	9.	Primary cup	12.	Valve seat

WHEEL BRAKE

The wheel brake is the internal expansion hydraulic type consisting of brake shoes, springs, a wheel cylinder, an adjuster and backing plates. Two wheel brakes are provided on each end of the front axle. The brake shoe, one end of it being connected to the anchor pin and the other end to the adjuster, is forced against the backing plate with a hold spring and pin. The primary shoe is provided with the parking brake lever and the secondary shoe with the actuator lever of the automatic clearance adjuster.

1. Wheel cylinder
2. Spring
3. Piston cup
4. Piston
5. Boot
6. Push rod
7. Return spring
8. Brake lining
9. Spring
10. Strut
11. Adjuster cable
12. Shoe
13. Cup
14. Hold-down pin
15. Spring
16. Spring
17. Adjuster lever
18. Return spring
19. Adjuster
20. Retainer
21. Backing plate
22. Return spring
23 Parking brake lever
24. Parking brake cable

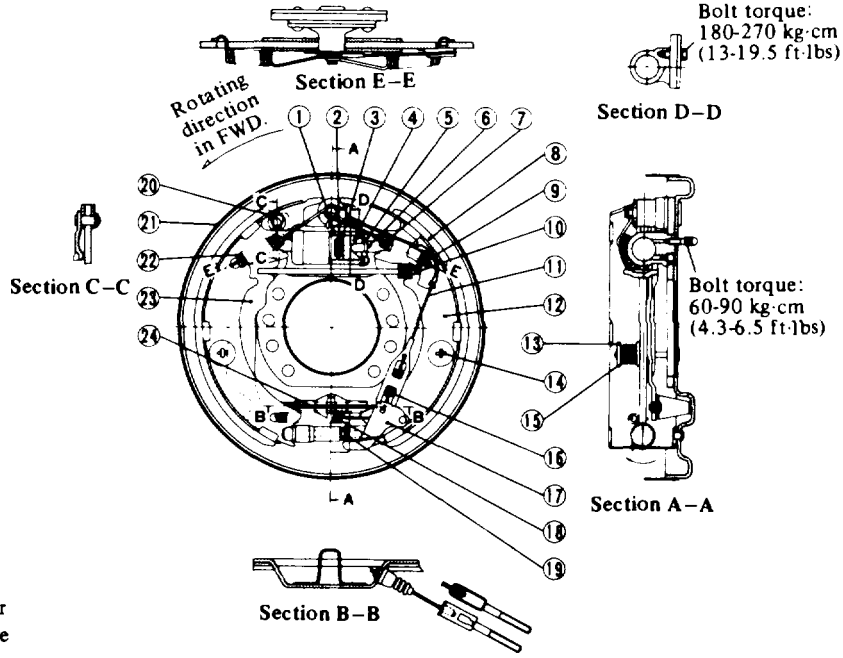


Fig. 4-444. Wheel Brake

The braking operation in forward travel is as follows: (See Fig.4-445) The primary and secondary shoes are forced by an equal force by operation of the wheel cylinder to bring the lining in contact with the brake drum. The primary shoe forces the adjuster with the aid of lining-to-drum friction force. Due to this, the adjuster pushes the adjuster end of the secondary shoe by a larger force than that offered by the wheel cylinder operation. The secondary shoe anchor end is forced strongly against the anchor pin, providing large braking force. On the other hand, the braking operation in reverse travel is performed in the reverse direction, but the braking force is the same as in the case of the forward travel.

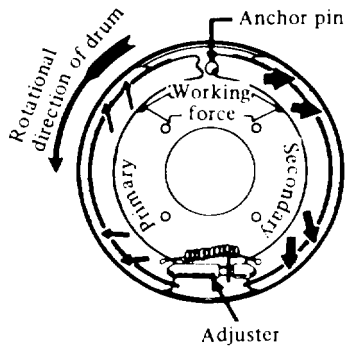


Fig. 4-445. Braking Operation in Fwd Travel

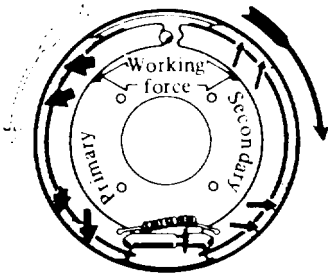


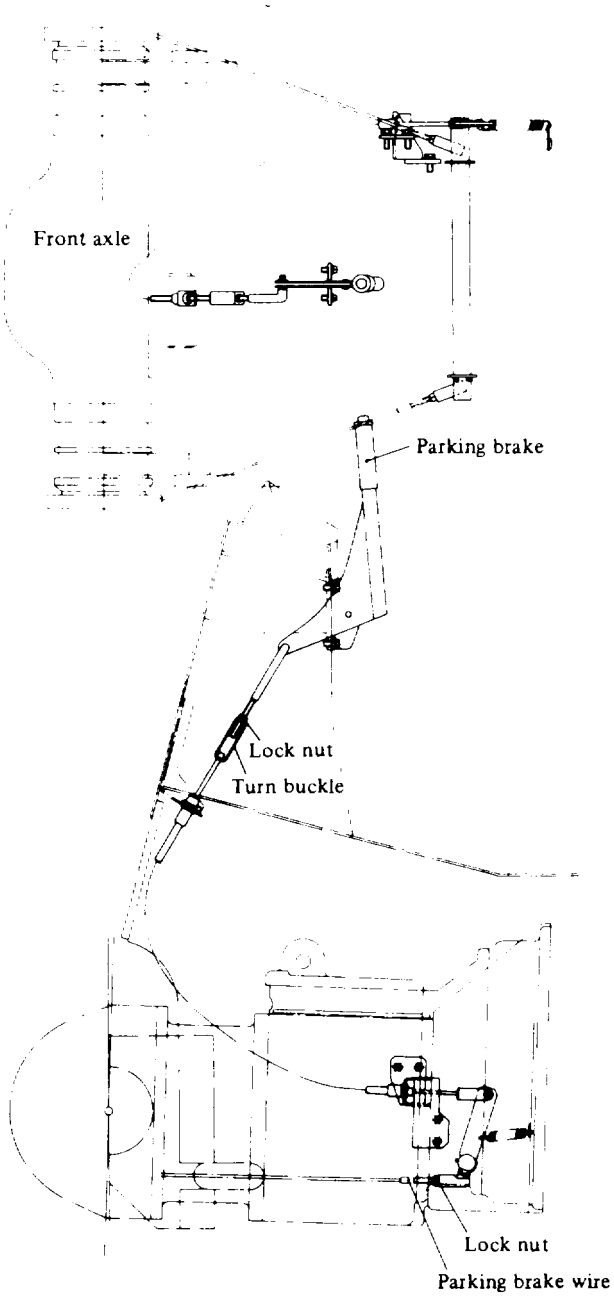
Fig. 4-446. Braking Operation in Rev. Travel

AUTOMATIC CLEARANCE ADJUSTER

The automatic clearance adjuster keeps a lining-to-brake drum clearance of 0.38-0.58 mm (0.015-0.023 in) automatically. This adjuster, however, actuates only when the truck is braked in reverse travel. When the brake pedal is pressed in reverse travel, the brake shoes are expanded. As a result of this, the secondary and primary shoes come into contact with the brake drum and rotate together until the upper end of the primary shoe comes into contact with the anchor pin. On the other hand, as the secondary shoe leaves the anchor pin, the section (A) of the adjuster lever is relatively pulled. Therefore, the adjuster lever turns around the section (B) so that the section (C) of the adjuster lever shifts upwards, causing the section (D) of the adjuster to turn to the right. As the brake pedal is further pressed, compression force applied on the adjuster thread becomes larger. This causes the overtravel spring to actuate to prevent overadjustment of the clearance, thus offering a smooth, fixed pedal feeling to the operator.

PARKING BRAKE

The parking brake is the mechanical, internal expansion type and built in the wheel brake. The brake shoes and brake drum are commonly used with the wheel brake system. As the parking brake lever is pulled. the parking brake lever pushes the strut to the right with the pin (E) as a fulcrum, forcing the secondary shoe against the brake drum



BRAKE PEDAL ADJUSTMENT
(TORQUE CONVERTER TYPE TRUCK)

(1) Loosen the push rod and interlocking bolt.
(2) Adjust the pedal height for 120 mm (4.72 in) with the stopper bolt.
(3) Adjust the left-side pedal (inching pedal) to obtain a free travel of 1-2 mm (0.039-0.079 in) with the turn buckle.
(4) Press the right-hand side pedal 60 mm (2.36 in) and adjust the push rod length so that the front end of the push rod is in contact with the master cylinder piston, then lock with the lock nut.
(5) Push down the interlocking bolt until its head comes in contact with the bar, and lock it.

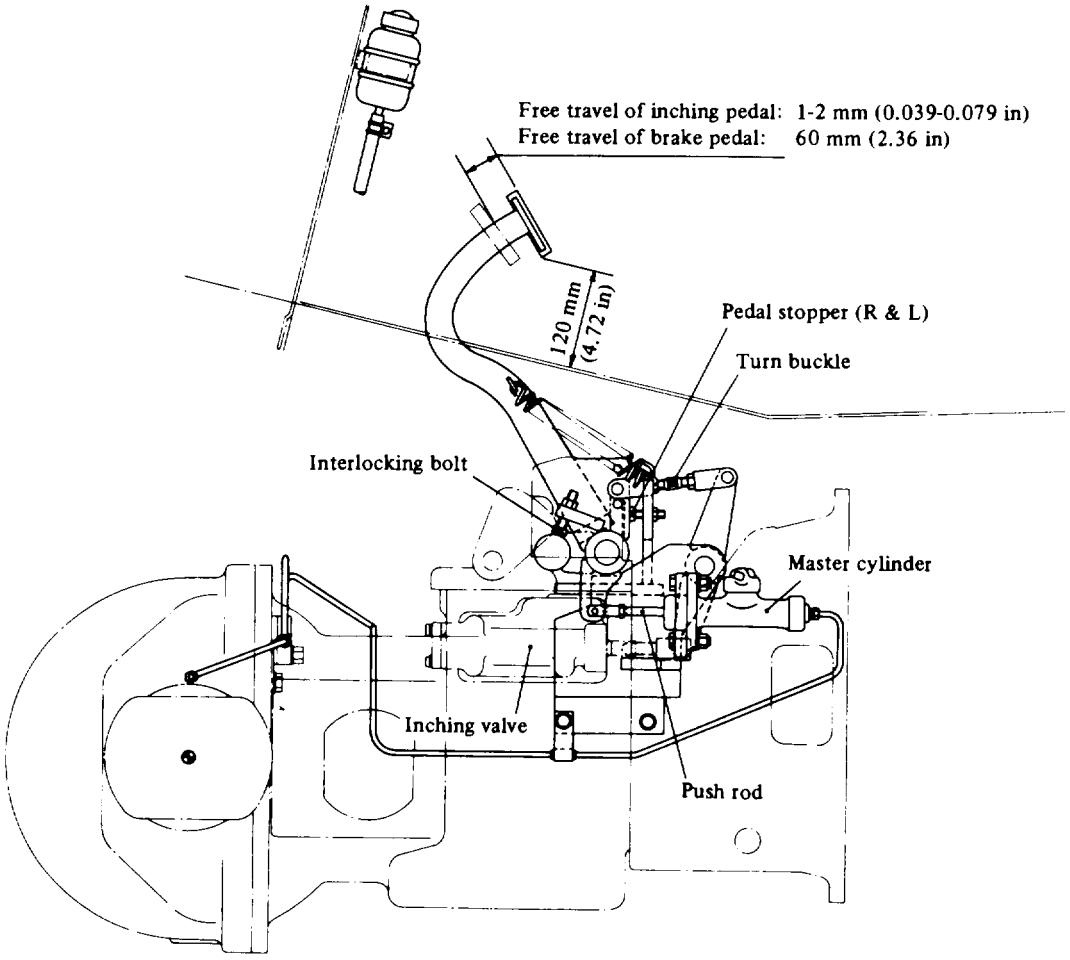

Free travel of inching pedal: 1-2 mm (0.039-0.079 in)
Free travel of brake pedal: 60 mm (2.36 in)
120 mm (4.72 in)
Pedal stopper (R & L)
Turn buckle
Interlocking bolt
Master cylinder
Inching valve
Push rod

Fig. 4-447. Brake Pedal Adjustment (Torque Converter Type Truck)

MAINTENANCE

This section covers the disassembly, reassembly, and adjustment of the wheel brake and the adjustment of the brake pedal.

DISASSEMBLY OF WHEEL BRAKE

(1) Remove the secondary shoe holddown spring, and then the adjuster lever, adjuster, and shoe-to-shoe spring. (1 point)

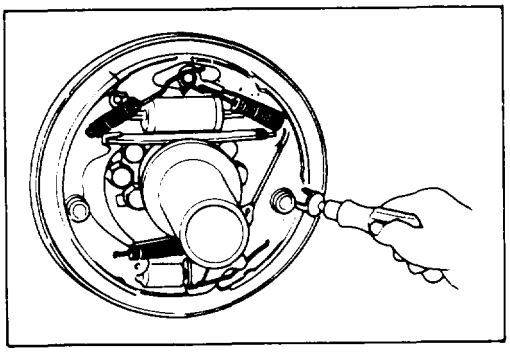


Fig. 4-448.

(2) Remove two shoe return springs.

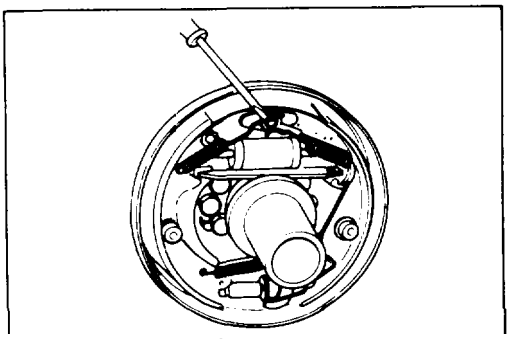


Fig. 4-449.

(3) Remove the primary side holddown spring. (1 point)

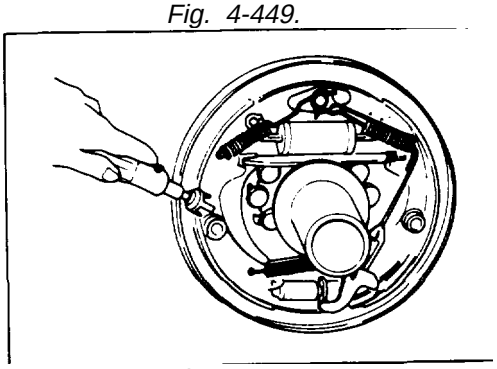


Fig. 4-450.

(4) Remove the primary and secondary shoes. At the same time, remove the adjuster and adjuster spring.

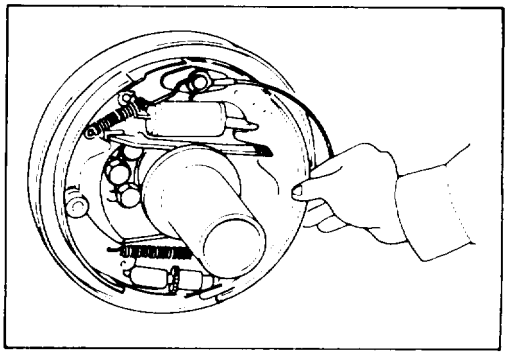


Fig. 4-451.

(5) Remove the brake line from the wheel cylinder. Remove the wheel cylinder mounting bolts and remove the wheel cylinder from the backing plate.

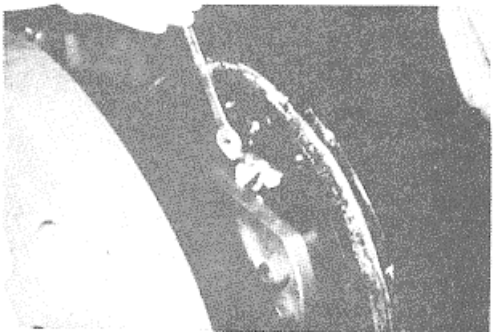


Fig. 4-452.

(6) Remove the E-retainer securing the parking brake cable to the backing plate. Remove the backing plate mounting bolts and remove the backing plate from the axle.

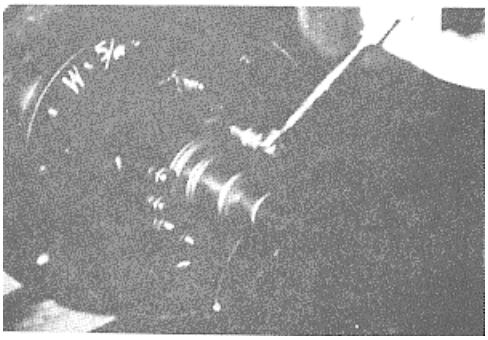


Fig. 4-453.

(7) Disassemble the wheel cylinder in the following manner: remove the boot and push the piston in to remove components at one side. Then press the piston from the opposite side to remove the rest.

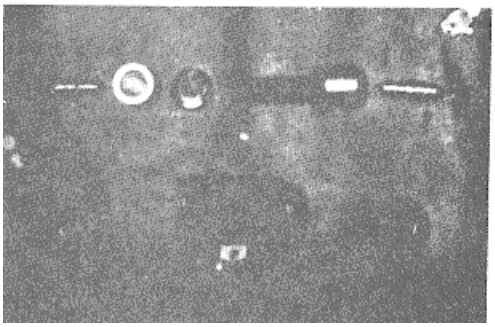


Fig. 4-454.

INSPECTION

Inspect all parts for defects and repair or replace if unsatisfactory.

(1) Check the inner surface of the wheel cylinder and the outer circumference of the piston for rust. Then measure the clearance between the piston and cylinder.
Standard: 0.065-0.15 mm (0.0026-0.0059 in)
Limit: 0.15 mm (0.0059 in)

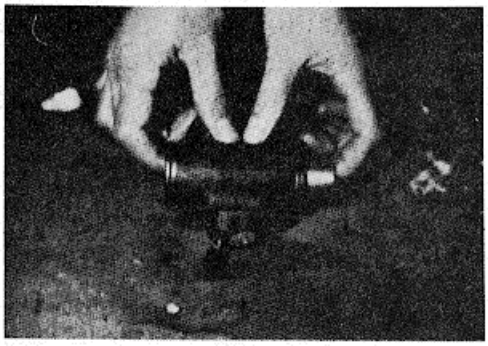


Fig. 4-455.

(2) Visually check the piston cup for damage or deformation. If unsatisfactory, replace.
Cup interference standard: 1.49 mm (cup o.d. of 30.1 mm) [0.059 in (cup o.d. of 1.19 in)]
Cup interference limit: 0.65 mm (cup o.d. of more than 29.0 mm) [0.026 in (cup o.d. of more than 1.14 in)]

(3) Check the free length of the wheel cylinder spring. If unsatisfactory, replace.
Specified free length: 28.58 mm (2.28 in)

(4) Check the thickness of brake lining.
If excessive wear is noticed, replace.
Specified thickness: 8.0 mm (0.32 in)
Thickness limit: 1.0 mm (0.039 in)

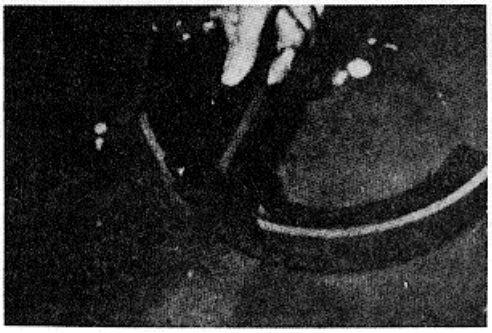


Fig. 4-456.

(5) Visually check the condition of the brake drum inner surface. If any damage or excessive wear is noticed, repair by machining or replace.
Standard: 314 mm (12.36 in)
Repair limit: 316 mm (12.44 in)

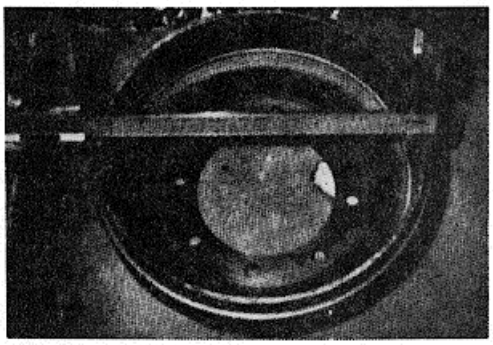


Fig. 4-457.

(6) Measure the free length and setting load of the shoe return spring.
Free length: 115.1 mm (4.53 in)
Setting length: 122 mm (4.80 in)
Setting load: 23 + 2.3 kg
(50.7 + 5.1 lbs)

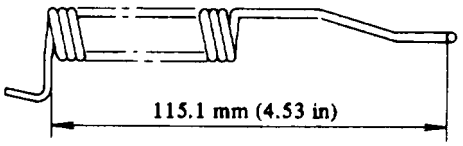


Fig. 4-458.

(7) Measure the free length and setting load of the shoe-to-shoe spring.
Free length: 104.5 mm (4.11 in)
Setting length: 122 mm (4.80 in)
Setting load: 8 + 0.8 kg
(17.6 + 1.76 lbs)

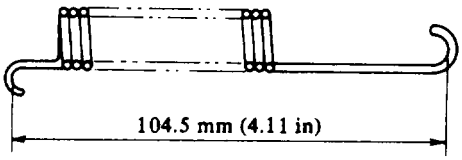


Fig. 4-459.

(8) Measure the free length and setting load of the adjuster spring.
Setting load: 1.5 kg (3.3 lbs)

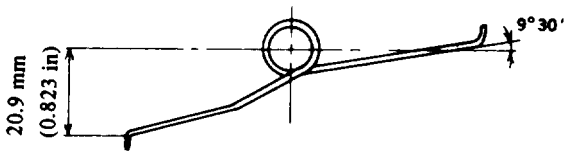


Fig. 4-460.

(9) Check the adjuster gear for damage and operating condition, and also check to see if it is in proper mesh with the pole lever gear. If any defect is found, replace.

WHEEL BRAKE REASSEMBLY

(1) Apply brake fluid on the wheel cylinder cup and piston, and reinstall spring, cup, piston and boot in this order.
(2) Install the wheel cylinder on the backing plate.
CAUTION : There are two kinds of wheel cylinders and backing plates; one for the right side and one for the left side. Make sure you have the correct one when installing it. Bolts should be torqued to 1.8-2.7 kg.m (13.0-19.5 ft.lbs).
(3) Install the backing plate on the front axle Torque the mounting bolts to 1.25-1.7 kg.m(9.0-12.3 ft-lbs).
(4) Apply heat-resistant grease (AKEBONO's AKB100 or equivalent) on the points indicated in Fig. 8-20, with due care not to contaminate the lining with grease.
(a): Backing plate shoe ledge surface.
(b): Anchor pin.
(c): Cable guide surface on which adjuster cable contacts.
(d): Parking brake lever pin.
(e): Adjuster screw and other rotating parts.

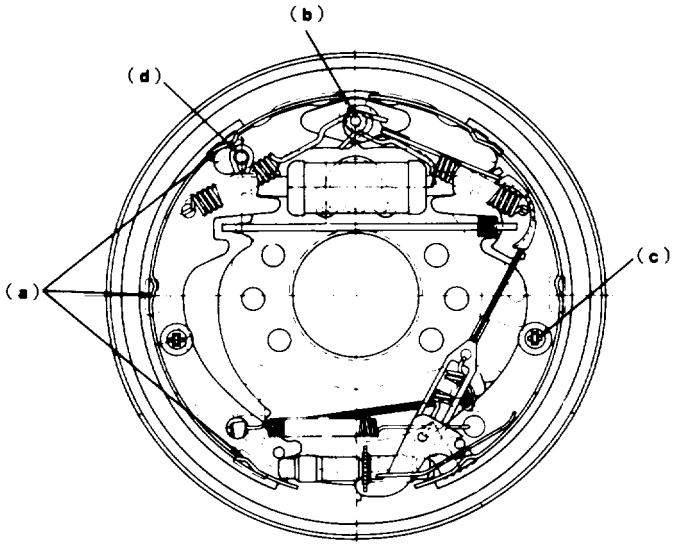


Fig. 4-461.

(5) Install the parking brake cable on the backing plate with E-retainer.
(6) Install shoes with hold-down springs.

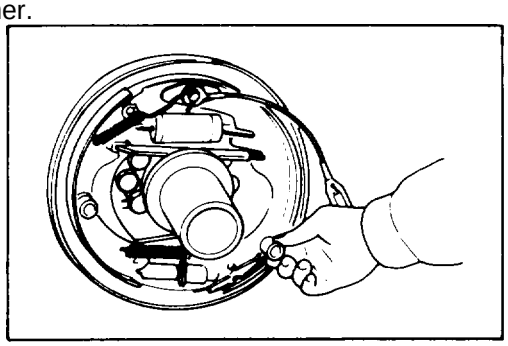


Fig. 4-462.

(7) Put the anti-rattle spring in the strut then install it on the shoe.

(8) Install the shoe guide plate on the anchor pin, and then install the shoe return spring on it. The primary side should be first worked on then proceed to the secondary side.

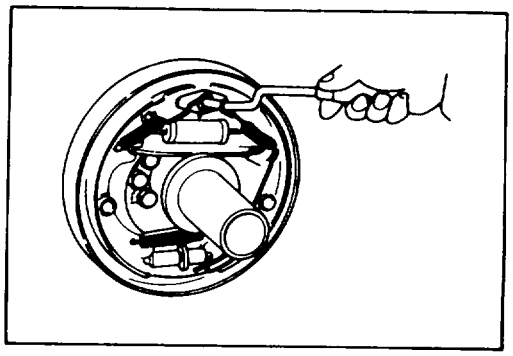


Fig. 4-463.

(9) Install the shoe-to-shoe spring, adjuster, adjuster spring and adjuster lever, paying attengion to the following points.
   (1) The screw direction and mounting direction of the adjuster, i.e. left-hand screw for left-side brake and right-hand screw for right-side brake.

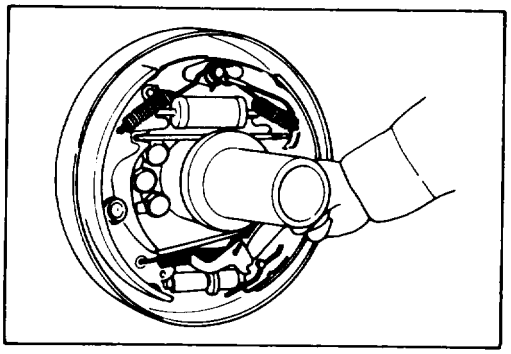


Fig. 4-464.

   (2) Adjuster spring direction. (Do not allow the adjuster gear teeth to contact with the spring.)
   (3) The shoe-to-shoe spring should be installed with the longer hook at the adjuster lever side.
   (4) After assembly, make sure that the adjuster lever end is in contact with the adjuster gear teeth.

(10) Install brake line on the wheel cylinder.

(11) Measure the inner diameter of brake drum and adjust brake shoe outer diameter to drum inner diameter 1.0 mm (0.04 in) by using the adjuster.

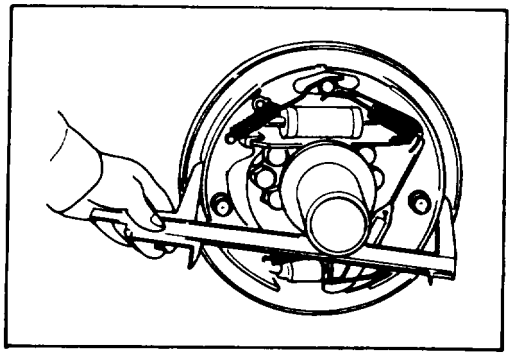
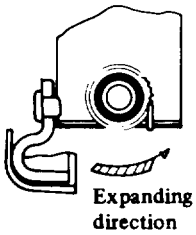


Fig. 4-465.

OPERATION TEST OF AUTOMATIC CLEARANCE ADJUSTER

(1) Make the brake shoe diameter nearly the specified mounting size, and pull the adjuster lever with your finger along the arrow mark as shown in the illustration given below to turn the adjuster gear. When removing your finger. the adjuster lever returns to its original position without rotation of the adjuster gear.
NOTE : Even if the adjuster gear turns back along with the adjuster lever motion when removing your finger, the adjuster will operate normally, when braked in reverse travel, after it has been mounted on the truck.

(2) If the adjuster fails to do the above operation when pulling the adjuster, proceed with follwoing inspection.
   (a) Make sure that the adjuster lever, adjuster, adjuster spring, adjuster cable and shoe-to-shoe spring are securely installed.
   (b) Check to see if the distance between the adjuster gear and the adjuster lever is 6 + 2 mm (0.15 + 0.135 in). See Fig. 8-25. If unsatisfactory, replace the part. Also check that the adjuster lever is in proper mesh with the gear.
   (c) Check the shoe-to-shoe spring and adjuster for deterioration, adjuster for proper rotation, gears for wear, and adjuster lever and its gear for damage. If unsatisfactory, replace.



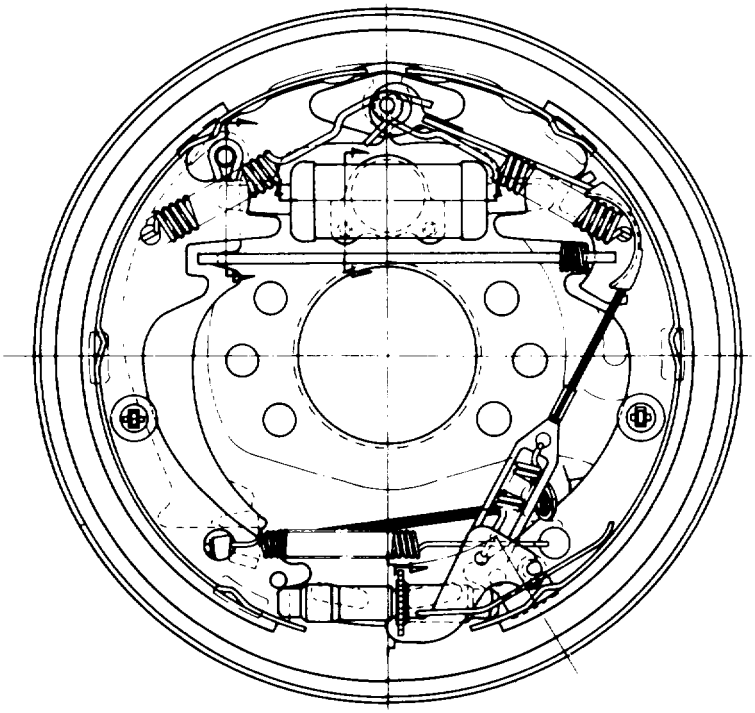


Fig. 4-466.

WHEEL BRAKE TROUBLESHOOTING

Problem	Possible Cause	Remedy
Poor braking force	1. Fluid leaks from brake system	Repair.
	2. Maladjustment of brake shoe clearance.	Adjust the adjuster.
	3. Overheating brake	Check for dragging.
	4. Poor contact between brake drum and lining.	Readjust.
	5. Foreign matter adhered to lining	Repair or replace.
	6. Foreign matter mixed in brake fluid.	Check brake fluid.
	7. Maladjustment of brake pedal (inching valve).	Adjust.
Noisy brake	1. Hardened lining surface or foreign matter adhered thereto.	Repair or replace.
	2. Deformed backing plate or loose bolts.	Repair or replace.
	3. Deformed shoe or malinstallation	Repair or replace.
	4. Worn lining	Replace.
	5. Loose wheel bearing	Repair.
Uneven braking	1. Foreign matter adhered to lining	Repair or replace.
	2. Maladjustment of brake shoe clearance.	Adjust the adjuster.
	3. Malfunctioning wheel cylinder	Repair or replace.
	4. Shoe return spring deteriorated	Replace.
	5. Deflected drum	Repair or replace.
	6. Improper tire inflation pressure	Adjust.
Soft or spongy brake	1. Brake fluid leaks from system	Repair.
	2. Maladjustment of brake shoe clearance.	Adjust the adjuster.
	3. Air mixed in system	Bleed air.
	4. Maladjustment of pedal	Readjust.

At the drive shaft side, an oil seal is press-fitted into the pump body to provide oil tightness performance. Oil tightness between the pump body and the pump cover is secured with a specially shaped packing.

CONTROL VALVE

The control valve consists of five(5) valve housings,three(3)plungers and one (1) relief valve. Each plunger and plunger housing are sandwiched by the inlet housing and outlet housing, which are all assembled with three stud bolts and nuts. The inlet housing contains the cartridge type relief valve.

(1) Plunger Operation

(a) Neutral Position Oil discharged from the pump returns through the neutral passage to the tank.

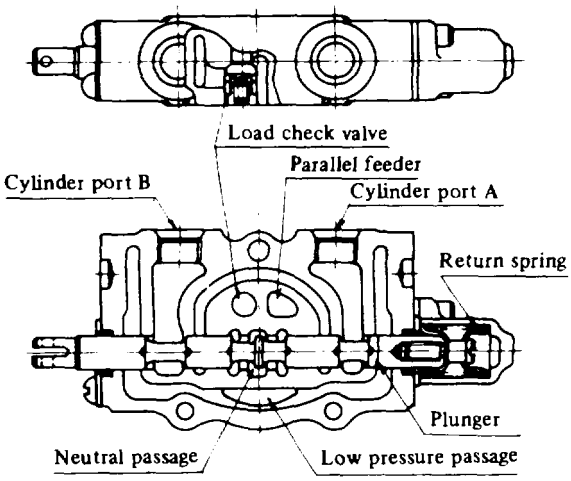


Fig. 4-467.

(b) Pushing in of Plunger

The neutral passages are closed and the oil passes through the parallel feeder and flows, pushing up the load check valve into the cylinder port "B". The returning oil from the cylinder port "A" flows through the low-pressure passage to the tank. The plunger is restored to the neutral position by the return spring.

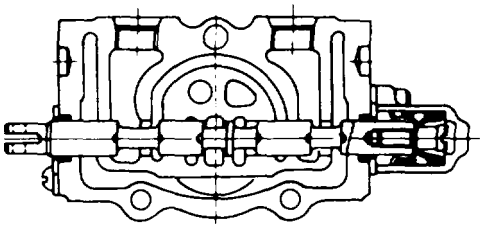


Fig. 4-468.

(c) Drawing out of Plunger (See Fig. 9-3.) With the neutral passage closed, the oil pushes up the load check valve, passing through the parallel feeder, and flows to the cylinder port "A". The returning oil from the cylinder port "B" flows through the low-pressure passage to the tank. The plunger is restored to the neutral position by the return spring.

(2) Operation of Relief Valve

The relief valve is located between the cylinder port "HP" and the low-pressure passage "LP". The oil flows through the poppet "C" and affects the two areas "A" and "B" which are different in diameter, so that the check valve poppet "K" and the relief valve poppet "D" are securely seated. (See Fig. 9-4.)

When the pressure in the cylinder port "HP" reaches the setting pressure of the pilot poppet spring, the pilot poppet "E" opens. The oil passes around the poppet, flowing through the drilled hole to the lowpressure side "LP". (See Fig. 9-5.)

As the pilot poppet "E" is opened, the pressure behind the poppet "C" drops, so that the poppet "C" is moved to seat of the pilot poppet "E".

As a result of this, the oil flowing behind the relief valve poppet "D" is cut off and the pressure at the inner side is reduced. (See Fig. 9-6.)

As compared to the pressure at the cylinder port "HP" side, the inner pressure becomes unbalanced, causing the relief valve poppet "D" to open and thereby sending the oil directly to the low-pressure passage "LP". (See Fig. 9-7.)

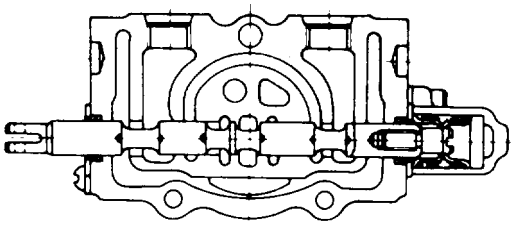


Fig. 4-469.

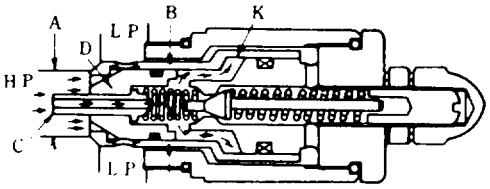


Fig. 4-470.

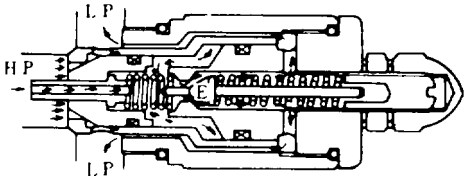


Fig. 4-471.

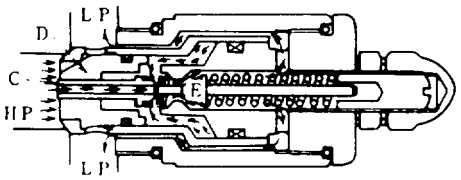


Fig. 4-472.

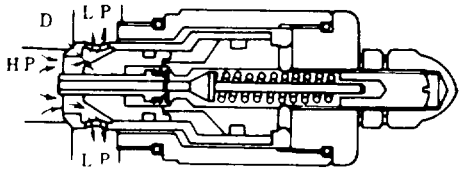


Fig. 4-473.

(3) Operation of Tilt Lock Valve

The tilt-lock valve is intended to prevent vibrations of the mast due to possible creation of internal negative pressure in the tilt cylinder and also to avoid danger incurred from mis-handling of the lever. On the conventional model, even if the engine is off, the mast can be tilted forward by actuating the tilt lever. But this newly adopted tilt-lock valve does not allow the mast to tilt forward as long as the engine is shut off, even if the tilt lever is pushed with the full load. Refer to Fig. 16-9 for the construction of the tilt-lock valve.

The port " A" side of the plunger housing is led to the front side of the tilt cylinder, and the port "B" side to its rear side. When the tilt lever is pulled backward (plunger drawn out), the oil from the pump flows into the port "A" while the port "B" side oil returns to the tank, so that the mast is tilted backward by the tilt cylinder.

When the tilt lever is pushed forward (plunger pressed), the oil from the pump flows into the port "B". But in the port "A" side, oil does not return to the tank, unless the poppet installed in the plunger is moved. In other words, the mast would not tilt forward unless the oil pressure at the rear side of the tilt cylinders reaches a certain level. Hence, while the engine is being shut down, the mast never tilts forward, nor does the internal pressure in the tilt cylinders become negative.

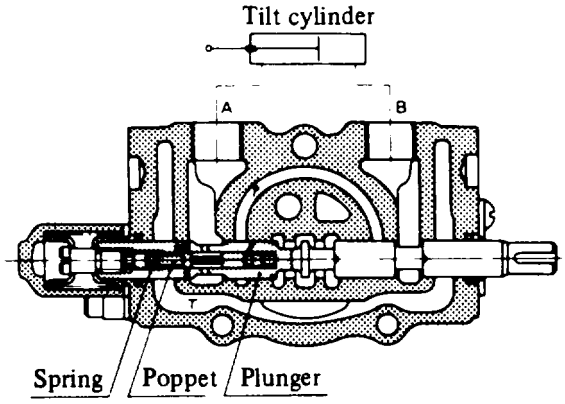


Fig. 4-474. Tilt Lock Valve

HYDRAULIC CIRCULATION SYSTEM (MAIN CIRCUIT)

The hydraulic circulation system of the main circuit is connected with the hydraulic circuit for the power steering. The oil from the main pump is therefore divided for the main circuit. The hydraulic piping is of O-ring fitting type with excellent sealing performance, providing secure oil tightness.

The hydraulic oil sent from the main pump is divided by the flow divider valve, and the hydraulic oil for the main circuit flows from the flow divider port "OUT" to the control valve. With the control valve in neutral position the oil returns to the oil tank, passing through the valve.

When the lift lever is pulled, the hydraulic oil from the control valve flows through the flow regulator and reaches the lower part of the lift cylinder piston to push up the piston rod.

When the lift lever is pushed, the cirucit between the lower part of the lift cylinder piston and the oil tank is opened, and the piston begins to descend due to the weight of piston rod, carriage, fork, etc. In this case, the oil returning to the control valve is regualted by the flow regualtor. When the tilt lever is operated, the hydraulic oil from the main pump reaches one side of the piston to push it. The oil pushed by the piston returns to the oil tank through the control valve.

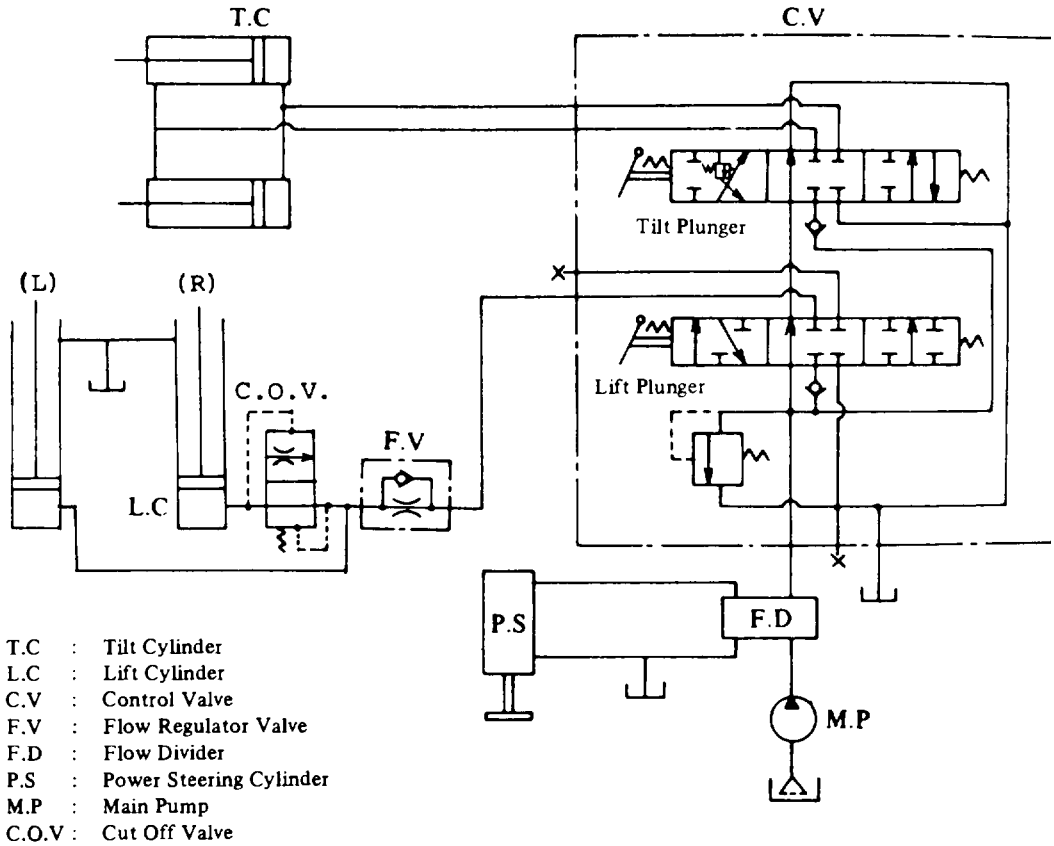


Fig. 4-475. Hydraulic Circulation System

FLOW REGULATOR VALVE

The flow regulator valve is located between the control valve and the high-pressure ports of the two lift cylinders, serving both as a flow regulating valve while forks are being lowered and a safety device if rubber hoses between the control valve and lift cylinders are damaged due to any reason. The operation of the flow regulator valve is given below.

See Fig. 16-13. When the forks are raised, high-pressure oil led from the control valve flows into the chamber (A) and shifts the sleeve (6) to the left. This opens the opening (G) to allow the high-pressure oil to flow along the two routes(A - B - G - D- E and A - B- C - D) and both paths lead to the lift cylinders. not regulated in any amount. When the forks begin to lower, oil discharged from the lift cylinders enters the chamber(E) and shifts the sleeve until it contacts the nipple. This closes the opening(G) so that oil flows through(E). (D). (H), (C), (B) and(A) to the tank. If the amount of oil discharged from the lift cylinders is increased, the pressure in the chamber(F) rises and moves the piston (5) to the right in spite of the spring force, narrowing the opening (H). So the flow of oil from the chamber (D) to the chamber(C) is decreased so that the descending speed of the forks is controlled.

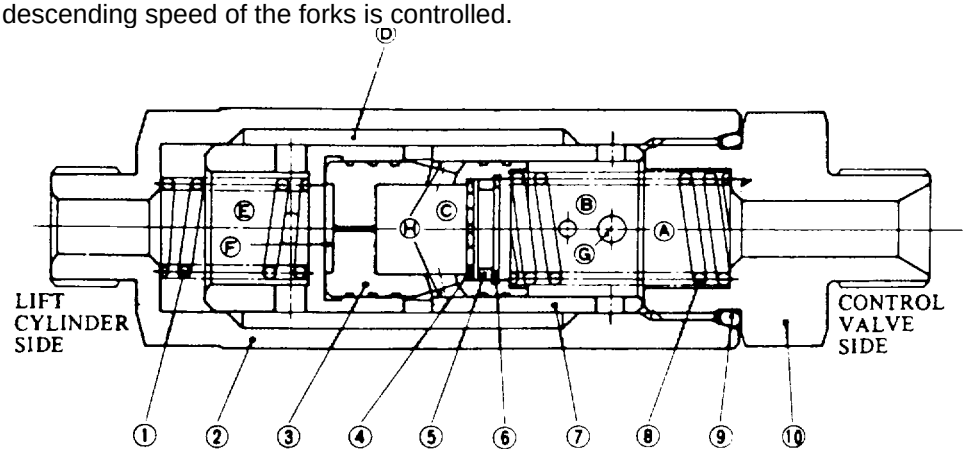


Fig. 4-476. Flow Regulator Valve

1. Reacting spring
2. Case
3. Piston
4. Orifice plate
5. Washer
6. Snap ring
7. Sleeve
8. Spring
9. "O"-ring
10. Nipple

TROUBLESHOOTING GUIDE

(1) Flow Valve

Problem	Possible Cause	Remedy
Handwheel is caught when rapidly turned.	Flow control valve spool catches	Disassemble, repair or replace
	Flow control valve spool worn	Replace as assembly.
Oil pressure does not rise.	Relief valve opened	Replace as assembly.
Oil pressure higher than relief set pressure	Relief valve closed	Replace as assembly.
Noise of relief valve	Relief valve vibrating	Replace as assembly.
Too high oil tempera-turn	Relief valve closed	Replace as assembly.
Heavy handwheel oper-ation while idling	Relief valve opened	Replace as assembly.
	Flow control valve spool catches	Disassemble and repair or replace.
	Flow control valve spool worn	Replace as assembly.
Varying steering force	Relief valve vibrating	Replace as assembly.
	Flow control valve spool catches	Disassemble and repair or replace.
	Flow control valve spool worn	Replace as assembly.
Heavy handwheel oper-ation	Relief valve opened	Replace as assembly.
	Flow control valve spool catches	Disassemble and repair or replace.
	Flow control valve spool worn	Replace as assembly.

MAINTENANCE SERVICE DATA

(1) Flow Valve

Checking Item	Standard Value	Service Limit
Spool to valve body clearance	10 to 20 u	More than 30 ,u
Flow control spring	7.12 kg (15.7 lbs)/ 26 mm (1.02) o.a. length	Less than 64 kg Less than 6.4kg (14.1 lbs)

(2) Power Cylinder

Unit: mm(in)

Checking Item	Standard Value	Service Limit
Piston rod to box clearance	0.011 to 0.113 0.150 (0.000433 to 0.000445 In)	(0.0059)

Section 5
Distributor Directory
SOUTH & WEST EUROPE

FINLAND.....
Kesko Oy
Machinery Division
01300, Vantaa 30,
Finland

Telephone: 90-83081
Telex: 124700A KKOS SF

SWEDEN.....
Ana Maskin AB
P0 Box 1003, S-611 29
Nykoping,
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Telephone: 155-88060/00946
Telex: 64370 ANATRAC S

NORWAY.....
Felleskjopet
8, Rosenkrantzgt.
Oslo 1
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Telex: 17156 FO N

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Hattingvej 3 P 0 Box 235
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Telex: 2177 VANGUR

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Telex: 25837 FELC El

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Killamarsh
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Telex: c/o 547676 Chamco G

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Downtime Limited
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Telephone: 01-857 2122
Telex: 898162 DTIM G

UNITED KINGDOM.....
Vernons Plant
Gores Road,
Kirkby Industrial Estate
Liverpool, L33 7XT
England
Telephone: 051 546 4441
Telex: 629803 Vernon G

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Equipco
Tour Gallieni 11
36 Ave Gallieni
BP 15-93175
Bagnolet, Cedex
France
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Telex: 210164 F

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Associated Motors Co., Ltd.
148, Rue d'argens, Msida,
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Pinto & Cruz, Limitada
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[Lift Division]
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Brampton, Ontario L6W 1 X4
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TCM America (MBK), Inc.
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Bridgeport, New Jersey 08014
Telephone: 609-467-3200
Telex: 835361 TCM AM BRGP

U.S.A.....
C. Itoh Industrial Machinery, Inc.
8001 Kempwood Drive
Houston, Texas 77055
US.A
Telephone: 713-681-8888
Telex: 77-5817 HOCIMCI

HAWAII.....
Bacon-Universal Company, Inc.
918 Ahua Street
Honolulu Hawaii 96819
U S A.
Telephone: 808-839 7202
Telex: 391423 BACON 0

ISLANDS OF THE WEST INDIES

DOMINICAN REPUBLIC.....
Ferreteria Americana C. Por A.
Apartado 1181, Santo Domingo
Republica Domminica
Telephone: 565-3141
Telex: 3470131

PUERTO RICO.....
San Miguel & Compania, Inc.
G P.O. 4348
San Juan
Puerto Rico 00936
Telephone: 1-809-721-7788
Telex: MIGUSAN 3450082

ANTILLES.....
Mits Curacao N.V.
Schottegatweg Noord 37
P O Box 365, Curacao
Netherlands Antilles
Telephone: 43722, 43621
Telex: 1231 MITS NA

BARBADOS.....
Tractors & Equipment Limited
P O Box 824E
Warrens
St Michael
Barbados
W.I.
Telephone: 03628/03305
Telex: 2350 TRACQUIP WB

TRINIDAD TOBAGO.....
Trinidad Import & Export Co. Ltd.
P O Box 348
1, Abercromby St, Port of Spain
Trinidad W I
Telephone: 53710, 54061
Telex: 3000 POS TLX WG
TRINIDAD (Public Booth)

CENTRAL AMERICA

GUATEMALA.....
Fischer Y Cia Ltda
Calzada Aguilar Batres32-00.
Zona 11
Guatemala C A
Telephone: 491432/480332
Telex: 5353 HFISFAGU

EL SALVADOR.....
Automotores Salvadorenos, S.A.
Apartado Postal 792, San Salvador,
El Salvador, C.A.
Telephone: 22-8137

HONDURAS.....
Distribuidora Barreti S.A. DE C.B.
P 0 Box 96, San Pedro Sula
Honduras C.A
Telephone: 52-00-15
Telex: 5561 BARRETT

COSTA RICA.....
Franz Amrhein & Co., S.A.
P 0 Box 1766 San Jose
Costa Rica
Telephone: 239166
Telex: 2476 FACO

PANAMA.....
Hojalateria Panama S.A.
Apartado B2, Panama 9A
Telephone: 60-1000
Telex: 368-3628

SOUTH AMERICA

COLOMBIA.....
DIDA Colombiana S.A.
Avenida Las Americas No. 34-17
Apartado Aereo 22978
Bogota, Colombia
Telephone: 244 77 24/244 77 84/ 268 76 48
Telex: 45879 DIDA CO

VENEZUELA.....
Lamax S.A.
Apartado Postal 76989, El Marques
Prolongacion Avenue Trieste
Los Ruices sur Caracas
Venezuela
Telephone: 22 75 89
Telex: 23183

SURINAME.....
Handelmaaeschappij I. Fernandes & Son N.V.
P.O. Box 1834 Paramaribo
Suriname
Mailing Address
Mailing Address.
Jureja NV
Keizerstraat 111-113
Paramaribo
Suriname
Telephone: 73405
Telex: 304-107 FERSON SN

EQUADOR.....
Rectimotor S.A.
Ave. 10 de Agosto 3570
P.O. Box 115A, Quito,
Ecuador
Telephone: 236680/520330
Telex: 2352 PANASE ED

CHILE.....
Teremaq S.A.
P 0. Box 6144 Correo 22
San Francisco 1244
Santiago
Chile
Telephone:566235-55700-50968
Telex: 40778 TERMO

URUGUAY.....
Covel S.A.
Constituyente 1530
Montevideo,
Urguay
Telephone: 413400, 491812
Telex: 6502 TDUUY

ARGENTINE.....
Neill Malcolm Argentina S.A.C.I.Y.F.
Florida 547-Piso 19
Gal Jardin. Torre Florida
Casilla de Correo 3693
1005 Buenos Aires,
Argentine
Telephone: 393-9006 & 9007
Telex: 21327 MALCO

TAIWAN.....
Pan Asia Machinery Co., Ltd.
4th Fl. China-Gulf Bldg
No 3, Tung Hwa, South Road
Taipei
Taiwan
Telephone: 7516241
Telex: 27176 TOAYA

HONG KONG.....
The Auto Custom Engineering Company Limited.
11 Chiu Lung Street 1 st Floor,
Central
Hongkong
Telephone: 5-266771
Telex: 65181 DACHO HX

PHILIPPINES.....
Paragon Trading & Services Corporation
5883 Zobel Roxas Ave.
Makati Rizal,
Philippines
Telephone: 50 59 46
Telex: 7425269

INDONESIA.....
P.T. New Safety Motor Corporation
JI. Batu Ceper 50 B
Jakarta,
Indonesia
Telephone: 361107
Telex: C/0 44517 UDINDA IA

SINGAPORE.....
Tractors Singapore Limited
ATS Division
26 Benoi Sector,
Jurong P.O. Box 170
Singapore 9161
Telephone: 264 4566
Telex: RS21291

MALAYSIA.....
Associated Tractors, Sdn. Bhd.
No 1, Jalan 19/1
P.O Box 107
Petaling Jaya Selangor
Malaysia
Telephone: 773722
Telex: MA 37603

THAILAND .....
Sino-Thai Industrial Corp., Ltd.
P.O. Box 196
308 Manabhan Bldg. Ground Fl.
Silom Road, Bangkok
Thailand
Telephone: 2349655
Telex: STICORP TH82831

PAKISTAN.....
Intertrade Distributors, Inc.
P.O Box 4978, 78-80 & 84
Chamber of Commerce
Aiwan-E-Tijarat Road
Karachi-2
Pakistan
Telephone: 223100
Telex: 24308 ITD PK

OCEANIA

GUAM.....
East-West Rental Center, Inc.
P 0 Box 7390 Tamuning
Marine Drive, Uppertumon
Guam 96911
Telephone: 646-1463

PAPUA NEW GUINEA.....
New Guinea Motors Pty. Ltd.
P.O. Box 1070 Boroko
Port Moresby
Papua New Guinea
Telephone: 253644
Telex: 22124

FIJI.....
Lion Machinery (Fiji) Ltd.
P O. Box 1139, Suva
Vatuwaga Industrial Estate
Off Fletcher Road,
Vatuwqa, Suva,
Fiji
Telephone: 27289
Telex: 2207 LION MAC FJ

AUSTRALIA.....
GWA Materials Handling Pty, Ltd.
1728 Ipswich Road, Rocklea
4106 Brisbane, Queensland
Australia
Telephone: 277-3388
Telex: GWAMHB AA41191

NEW ZEALAND.....
Cable Price Corporation Ltd.
G.P.D. Hause, 108 The Terrace
P.O. Box 10042, Wellington
New Zealand
Telephone: 728-478
Telex: NZ3438 CAPRICE

MIDDLE EAST

KUWAIT.....
Boodai Trading Co., Ltd.
P.O. Box Safat 1287
Kuwait
Telephone: 427159
Telex: 22050, 22210

BAHRAIN.....
A.J.M. Kooheji & Sons
P.O. Box 74
Bahrain

United Arab Eminates.....
Boodai Trading Co., Ltd.
[Dubai Office]
P.O. Box 5108 Deira
Dubai,
U.A.E.
Telephone: 660C80
Telex: 45597

SAUDI ARABIA.....
Abdul Aziz Mohammed A. Aljomaih
[Jeddah Office]
P.O. Box 467 Jeddah
Saudi Arabia
Telephone: 23706
Telex: 401147 JOMAIH SJ

SAUDI ARABIA.....
Arab Equipment Establishment
Dharan Road, P.0 Box 1660
Damman,
Saudi Arabia
Telephone: 8577020
Telex: 670155

JORDAN.....
G.M.C.O.
P.O. Box 35094
Amman
Jordan
Telephone: 77981
Telex: 21704 Gse jo

LEBANON.....
Bardawill & Co.
P.O. Box 110-967 Beirut
Lebanon
Telephone: 262801
Telex: 20822 LE

SYRIA.....
Larza Trading
Hamra Street Daada
& Zaim Bldg.
Damascus
Syria
Telephone: 119268
Telex: LARZA 11375 SY

CYPRUS.....
Alexander Dimitriou & Sons Ltd.
4 Salamis Avenue,
P.O. Box 1932 Nicosia
Cyprus
Telephone: 73186
Telex: 6052323 ALEX CY

TURKEY.....
Manukyan Biraderler
Cicekpazar Sakacesme Sok 6
Istanbul, Turkey
Telephone:225614,272071
463820

AFRICA

EGYPT.....
Melarcgypt
Boktor Square, Heliopolis
Cairo
Egypt
Telephone: 876164
Telex: 93010 MELAR UN

TUNISIA.....
Societe Ennakl
5 Ave. Du Ghana
Tunis
Tunisia
Telephone: 249116
Telex 12225 TUNIS

MOROCCO.....
S.M.A.C.
29 Bis Rue Mohamed Diouri
Casablanca,
Morocco
Telephone: 30 55 65
Telex: SMAC 24884

REPUBLIC OF DJIBOUTI.....
Establissements Marill
8, Rue Marchand
Republic of Djibouti
Telephone: 2450
Telex 5827 MARILL DJ

TANZANIA.....
Agricultural & Industrial Supplies Co., Ltd.
P.O. Box 4797, Dar Es Salaam
Tanzania
Telephone: 25201
Telex: 41355

MAURITIUS.....
J. Vaulbert de Chantilly
27 Rue Royale
P 0 Box 2 Port Louis
Mauritius
Telephone: 2-0950
Telex: 4321 DOU DOU

SOUTH AFRICA.....
Criterion Equipment Co. (PTY) Ltd.
[Head Office]
P.O. Box 4151 Alrode 1451
Johanesburg,
Rep. of South Africa
Telephone: 8651022
Telex: 8-3295 SA

APPENDIX A - LIST OF APPLICABLE PUBLICATIONS

PUBLICATION INDEXES AND GENERAL REFERENCES

Indexes should be consulted frequently for latest changes or revisions of references given in this appendix and for new publications relating to material covered in this publication.

a. Consolidated Index Of Army Publications and Blank Forms (Includes Blank Forms; Doctrinal Training And Organizational Publications; Technical manuals ---------- DA PAM 310-1

b. General References.
Dictionary or United States Army Terms ---------- AR 310-25
Authorized Abbreviations and Brevity Codes ---------- AR 310-50
Military Training Management ---------- TC 21-5-7
How to prepare and Conduct Military Training ---------- FM 21-6
Military Symbols ---------- FM 21 -30

OTHER PUBLICATIONS

The following publications contain information pertinent to the major item materiel and associated equipment.

a. Camouflage.
Camouflage ---------- FM 5-20

b. Decontamination
Chemical, Biological, and Radiological (CBR) Decontamination ---------- TM 3-220
Chemical, Biological, Radiological, and Nuclear Defense ---------- FM 21-40

c. General
Accident Reporting and Records ---------- AR 385-40
Basic Cold Weather Manual ---------- FM 31-70
Cooling Systems: Tactical Vehicles ---------- TM 750-254
Manual for Wheeled Vehicle Driver ---------- FM 21-305
Driver selection and Training (Wheeled Vehicles) ---------- FM 55-30
Mountain Operations ---------- FM 90-6
Northern Operations ---------- FM 31-71
Operation and Maintenance of Ordnance Materiel in Cold Weather ($O^{O}F.$ to $65^{0}F.$) ---------- FM 9-207
Principles of Automotive Vehicles ---------- TM 9-8000
Prevention of Motor Vehicle Accidents ---------- AR 385-55
Procedures for Destruction of Tank Automotive Equipment to Prevent Enemy Use

d. Maintenance and Repair. ---------- TM 750-244-3
Organizational Care Maintenance and Repair: Pneumatic Tires, Inner Tubes and Radial Tires ---------- TM 9-2610-200-20

OTHER PUBLICATIONS (cont)

Description, Use, Bonding Techniques, and Properties of Adhesives ---------- TB ORD 1032
Inspection, Care, and Maintenance of Antifriction Bearings ---------- TM 9-214
Materials Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Materiel
and Related Materiels Including Chemicals ---------- TM 9-247
Metal Body Repair and Related Operations ---------- FM 43-2
Non-Aeronautical Equipment Army Oil ---------- TB 43-0210
Analysts Program (AOAP)
Painting Instructions for Field Use ---------- TM 9-213
Hand Portable Fire Extinguishers Approved for Army Users ---------- TB 5-4200-200-10

Report of Damaged or Improper Shipment ---------- AR 700-58
Operation and Organizational, Maintenance Manual for Lead-Acid
Storage Batteries ---------- TM 9-6140-200-14
Organization, Policies, and Responsibilities for Army Materiel
Maintenance Concepts and Policies ---------- AR 750-1
Use of Antifreeze Solutions and Cleaning Compounds in Engine Cooling System ---------- TB 750-651
Welding Theory and Application ---------- TM 9-237
Color, Marking, and Camouflage Painting of Military Vehicles Construction
Equipment, and Materials Handling Equipment ---------- TB 43-0209
e. Shipment and Limited Storage.
Administrative Storage of Equipment: -TM 740-90-1
Color Marking and Preparation of Equipment for Shipment of Army Materiel ---------- AR 746-1
Preservation, Packaging, Packing and Marking Materials, Supplies, and
Equipment Used by the Army ---------- SB 38-100
The Army Maintenance Management Systems (TAMMS) ---------- DA PAM 738-7 50
f. Field Manuals.
Explosives and Demolitions ---------- FM 5-25
Radio Interference Suppression ---------- FM 11-65
Cold Weather Operations ---------- FM 31-70
First Aid for Soldiers ---------- FM 21-11

APPENDIX B
SUPPLEMENTAL OPERATING, MAINTENANCE AND REPAIR PARTS INSTRUCTIONS WITH MAINTENANCE ALLOCATION CHART FOR: TRUCK, LIFT, FORK, GASOLINE ENGINE DRIVEN 4,000 LB CAPACITY, 144 INCH LIFT PNEUMATIC RUBBER TIRE, TCM AMERICAN MODEL FG30N7(T) NSN 3930-01-146-3990 MHE 259

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SECTION I

GENERAL

1.1 Purpose: To provide the user and support personnel supplemental maintenance and repair parts instructions applicable to the 4000 lb TCM America Model FG30N7(T) Forklift Truck.

1.2 Scope: This SOMARPI applies to Department of the Army Units, Organizations and Activities that use and/or support the Truck, Forklift, 4000 lb, Pneumatic Rubber Tire, 144 inch Lift Height, NSN 3930-01-146-3990.

1.3 Description: The 4000 lb, 144 inch, gasoline driven forklift truck is manufactured by Toyo Umpanki Co., LTD, Japan. Its four-cylinder engine operates on a 12V electrical system and is designed to use lead free gasoline. The truck is a front drive vehicle. It is equipped with an internal expansion type hydraulic brake and a mechanical parking brake on both drive wheels. Power steering circuits for the truck are integrated into the hydraulic circulation system. Controls to operate the lift/tilt cylinders and side shifter are located to the right of the operator. The torque converter-type transmission is a combination device consisting of the torque converter and power-shift transmission that provides an inching capability.

1.4 Operational Concept: The 4000 lb TCM America Model FG30N7(T) is intended to be used for stacking and unstacking, moving cargo in and around warehouses, loading platforms and docks within the military supply system; also for moving cargo in and out of transport carriers, such as highway trailers and vans, cargo containers, railroad cars, cargo vessels and aircraft. Trucks are intended for operation over paved, semi-prepared and other hard surfaces for short distances.

1.5 Procurement Status: The forklift is procured under Contract Number DAAE0782-C-6720.

1.6 Personnel and Training:

a. MOS Requirements. Qualitative and Quantitative Personnel Requirements Information (QQPRI) will be disseminated IAW AR 611-1. The following MlOSs can operate and maintain the forklift:

(1) Operator: 62F and 76V

(2) Organizational Maintenance: 63S

(3) Direct and General Support Maintenance: 63S, 63G and 63W

b. Training:

(1) New Equipment Training Team (NETT). Teams are available to major field commands. Training teams should be requested only when trained personnel are not available in the Command to operate and/or maintain the truck. Request for NETTs should be forwarded to:

Commander
US Army Tank-Automotive Command
ATTN: AMSTA- MLT
Warren, MI 48090

(2) New Material Introductory Teams (NMIT). Major field commands requiring briefings to command staff and users should forward their requests to address shown in para 1.6b.(1). Receiving commands are responsible for the itinerary of NMITs.

1.7 Logistics Assistance (AR 700-4): US Army Tank-Automotive Command's Logistic Assistance Representives stationed in CONUS and OCONUS installations are available to furnish on-site training and/or technical assistance as outlined in AR 700-4.

1.8 Recommending Publication Changes: You can improve this publication by recommending improvements, using DA Form 2028 (Recommended Changes to Publications and Blank Forms) and mail direct to:

Commander
US Army Tank-Automotive Command
ATTN: AMSTA--MVM
Warren, MI 48090

SECTION II.

MAINTENANCE

2.1 Maintenance Concept:

a. The 4000 lb TCM America Model FG30N7(T) will not require special or new maintenance considerations. Maintenance operations can be accomplished within the current maintenance support concept for Material Handling Equipment (MHE).

b. Nature and Extent of Maintenance:

(1) Maintenance Allocation Chart (MAC): Maintenance will be performed as indicated in the MAC, SECTION V, to retain and/or restore serviceablilty. Units may exceed their authorized scope and function in the MAC when approved by appropriate commander.

(2) Operator Maintenance: Operator maintenance is limited to daily preventive maintenance checks and routine servicing SECTICN VIII.

(3) Organizational Maintenance: Organizational maintenance consists of scheduled preventive maintenance services, limited replacement,minor repair and adjustments SEQTION VIII.

(4) Direct Support Maintenance: Direct support maintenance consists of repairs on-site and for return to the user of the end item/assemblies which can be maintained efficiently with a minimum of tools and test equipment.

(5) General Support Maintenance: General support maintenance will overhaul and repair for return to the supply system those items designated by the Area Support Commander.

(6) Depot Maintenance: There is no scheduled maintenance for the forklift at this level.

c. Maintenance Expenditure Limit (MEL): The maintenance expenditure limit is based on a life expectancy of 11 years. Repair limits are based on 50% of replacement cost for the first 7 years and 30% for the last 4 years.

2.2 Reliability, Availability and Maintainability (RAM): Reliability, availability and maintainability will be assessed through field evaluation of current users. Specific numberical RAM requirements or objectives are not established.

2.3 Modifications: Corrections or malfunctions that require modification of the end item must have Government approval prior to field implementation.

2.4 Equipment Improvement Recommendations (EIR): Equipment improvement recommendations will be submitted IAW DA Pam 738-750.

2.5 Shipment and Storage:

a. Shipment: Refer to TB 740-97-2 for procedures covering preservation of equipment for shipment. General procedures for shipment are in FM 55-15, with more specific information in TM 55-2200-001-12 for rail and TM 55-450 series for air transport.

b. Administrative Storage: Refer to TM 740-90-1 for instructions.

c. Weight Classification: The weight classification of the end item is 9330 lbs.

2.6 Destruction to Deny Enemy Use: Refer to TM 750-244-3 for instructions.

2.7 Basic Issue Items List (BIIL):

Description	NSN	Mfg Code/ Reference No.	Qty. Auth
Folder, Equipment	7510-01-065-0166	(72094) 43986-1	1

2.8 Special Tools and Equipment: None required.

2.9 Maintenance Forms and Records: Operational, maintenance and historical forms/records will be maintained IAW DA Pam 738-750.

SECTION III.
Repair Parts Supply

3.1 General:

a. The basic policies and procedures in AR 710-2 and AR 725-50 are generally applicable to repair parts management for Material Handling Equipment (MHE) items.

b. Weapon System Designator Code for this vehicle is not applicable.

c. Automated Processing (AUTODIN) of Federal Supply Code for Manufacturers part number requisitions, without edit for matching NSNs, is authorized.

3.2 Prescribed Load List (PLL): The PLL, distributed by TACOM, is an estimated 15 days supply recommended for initial stockage at organizational level. Management of PLL items will be governed by the provisions of AR 710-2 and local command procedures. A prepared list of PLL parts will be provided to OCONUS units before shipment of the end item. Selection of PLL parts for shipment to OCONUS units is based upon the receiving command's recommendations after their review of the TACOM prepared list. Organizations and activities in CONUS will establish PLL stocks through normal requisitioning process (SECTION X). Local purchase of PLL for CONUS units is authorized.

3.3 Authorized Stockage List (ASL): The ASL, also distributed by TACOM, is an estimated 45 days supply of repair parts for support units and activities. An initial list of ASL parts will be provided to designated support (OCONUS) units before shipment of the end item. The parts shipped will be selected according to the recommendations of the receiving commands. Receiving commands will make their recommendations after review of the initial list distributed by TACOM. Support units and activities in CONUS will establish ASL stocks through the normal requisitioning process (see SECTION X). Local purchase of repair parts for CONUS units is authorized IAW 710-2 and AR 735-110.

3.4 Requisitioning Repair Parts (MILSTRIP):

a. Preparation and Transmittal

(1) Requisitions will be prepared in the normal MILSTRIP format.

(2) NSN Repair Parts. Requisitions transmitted by AUTODIN for NSN repair parts will be automatically routed by the Defense Automated Addressing System (DAAS) to the responsible Federal Supply Class Manager.

(3) Non-NSN Repair Parts. Requisitions for non-NSN repair parts may be locally procured or requisitioned from the Defense Construction Supply Center (DCSC). When the manufacturer's part number and the FSCM exceed columns 8-22, prepare an A05/AOE requisition.

(a) Project codes have been assigned to identify non-NSN repair parts requisitions placed on the wholesale supply system. Refer to SECTION X for applicable codes and format.

(b) Part numbers not found in military publications or GSA supply catalogs, full exception data will be provided. Exception data is defined as information required for item identification or requisition processing which cannot be put in a mechanized requisition. Refer to SECTION X. for applicable codes and format to assist in requisitioning parts for Construction and Material Handling Equipment. Requisitions are mailed to:

Commander
Defense Construction Supply Center
ATTN: DCSC-OSR
Columbus, OH 43215

(4) Non-AMDF Requests. All requests for NSN items not in the AMDF will be identified by an assigned Document Identified Code (DIC). These requests will be edited for sufficient data to provide identification of higher supply levels. Refer to SECTION X for applicable codes/format for CONUS/OCONUS requests.

b. MHE repair parts that cannot be locally procured will be routed to DCSC. OCONUS activities are not required to attempt local purchase.

SECTION IV.

WARRANTY GUIDELINES

NOTE

Do not attempt to conduct negotiations directly with the manufacturer in the event of a warranty dispute. These negotiations are the responsibility of the contracting officer.

1. The warranty period is for 15 months from date of acceptance by the government or 1500 hours of operation, whichever comes first. If such newly delivered vehicles are placed in Government Depot Storage prior to use, warranty will not begin until the vehicle is withdrawn from storage or until six months from date of acceptance. The contractor must be notified prior to placing and withdrawing stored vehicles, by identifying each vehicle, in order to extend the warranty period.

2. All Warranty Claims, whether they are settled locally with a manufacturer's representative or processed through Army maintenance supply channels, must be reported on DA Form 2407 and distributed IAW DA PAM 738-750. Warranty reports should be forwarded to:

Commander
US Army Tank-Automotive Command
ATTN: AMSTA-MP
Warren, MI 48090

3. If a TCM Service Agency is not available, or should an emergency condition arise and time constraints do not permit initial reporting through normal channels for CONUS units, notify the National Maintenance Point(NMP) by telephone, AUTOVON 786-8300. OCONUS units should follow warranty procedures in DA PAM 738-750.

SECTION V.
MAINTENANCE ALLOCATION CHART
FOR
TRUCK, LIFT, FORK, GED, PT, 4,000 LB
TCM AMERICA MODEL FG30N7(T)
NSN 3930-01-146-3990

SECTION I. Introduction

1. General: This Maintenance Allocation Chart (MAC) designates responsibility for performance of maintenance functions to specific maintenance categories.

2. Maintenance Functions: Maintenance functions are defined as follows:

a. Inspect: To closely and critically examine (e.g., sight, sound, or feel) an item to detect errors, flaws, wear, etc., and to determine its condition and serviceability by comparing its physical, mechanical/electrical characteristics within established standards.

b. Test: To verify serviceability and detect incipient failures by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service: Operations required periodically to keep an item in proper operating condition; i.e., to clean (decontaminate), to preserve, to drain, to paint or to replenish fuel, lubricants, hydraulic fluids or compressed air supplies.

d. Adjust: To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

e. Align: To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate: To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install: The act of emplacing, seating or fixing into position an item, part or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace: The act of substituting a serviceable like type part, subassembly or module (component or assembly) for an unserviceable counterpart.

i. Repair: The application of maintenance services (inspect, test, service, adjust, align, calibrate, or replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (components or assembly), and item or system.

j. Overhaul: That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild: Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

3. Column Entries: Columns used in the MAC are explained below:

a. Column 1 Group Number: Column One (1) lists group numbers, the purpose of which is to identify components, assemblies, subassemblies and modules with their next higher assemblies.

b. Column 2 Component/Assembly: Column Two (2) contains the noun names of components, assemblies, subassemblies and modules for which maintenance is authorized.

c. Column 3 Maintenance Functions: Column Three (3) lists the functions to be performed on the item listed in Column 2.

d. Column 4 Maintenance Category: Column Four (4) specifies, by the listing of a "work time" figure in the appropriate subcolumn(s), the category of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or category of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "work time" figures will be shown for each category. The number of man-hours specified by the "work time" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance chart. This figure does not include any time for performance of preliminary tasks listed elsewhere in the MAC, e.g., removal of engine under repair of fuel pump when the engine is listed separately in the MAC.

The symbol designations for various maintenance categories remain as follows.

C - Operator/Crew

O - Organizational Maintenance.

F - Direct Support Maintenance

H - General Support Maintenance

D - Depot Maintenance

e. Column 5 - Tools and Equipment: Column Five (5) specifies by code, those common tool sets (not individual tools), test and support equipment required to perform the designated functions.

MAINTENANCE ALLOCATION CHART FOR
TRUCK, FORKLIFT, 4000 LB (144") PT, GED
MAKE: TCM AMERICA (61888) MODEL: FG30/N7 (T)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS
01	ENGINE								
0100	Engine Assembly								
	Engine Assembly	Inspect	.1						
		Service		.5				1,8	
		Replace			8.0			1,2,3,4 8	
		Repair			14.0			1,2,3,4 5,8	
0101	Crankcase, Block								
	Cylinder Head								
	Cylinder Block	Replace			10.0			1,2,8	
	Cylinder Head Assembly	Replace			4.0			1,2,8	
0102	Crankshaft Assembly	Replace			11.0			1,2,4,8	
0103	Flywheel Assembly								
	Flywheel Assembly	Replace			5.0			1,2,3,8	
0104	Piston & Connecting								
	Rods								
	Piston Assembly	Replace			14.0			1,2,5,8	
		Repair			15.0			1,2,8	
0105	Valves, Canshaft &								
	Timing System								
	Rocker Arm Assembly	Adjust			1.0			1,8	
		Replace			2.0			1,2,8	
		Repair			3.0			1,8	

MAINTENANCE ALLOCATION CHART FOR
TRUCK, FORKLIFT, 4000 LB (144") PT, GED
MAKE: TCM AMERICA (61888) MODEL: FG30/N7 (T)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS
	Valves, Assembly	Replace			3.0			1,2,8	
		Repair			8.0			1,4,5,8	
0106	Engine Lubrication System								
	Oil Pan	Replace			3.5			1,8	
		Repair			4.0			1,4,7,8	
	Engine Oil Pump	Test			.5			1,8,9	
		Replace			3.0			1,8	
	Oil Filter	Service		.5				1	
		Replace		.5				1	
	PCV Valve	Service		.1				1,8	
		Replace		.2				1,8	
0108	Manifolds								
	Manifolds, Intake & Exhaust	Replace		2.5				1,2,8	
03	FUEL SYSTEM								
0301	Carburetor	Adjust		.5				1,3,8	
		Replace		1.0				1,3,8	
		Overhaul		2.5				1,3,8	
	Overflow Line	Inspect		.1					
		Replace		.5				1,3	
0302	Fuel Pump & Lines								
	Fuel Pump	Test		.5				1,3,8,0	
		Replace		1.0				1,3,8	
0304	Air Cleaner								
	Air Cleaner	Inspect	.1						
		Service		.1				1	
		Replace		.1				1	

MAINTENANCE ALLOCATION CHART FOR
TRUCK, FORKLIFT, 4000 LB (144") PT, GED
MAKE: TCM AMERICA (61888) MODEL: FG30/N7 (T)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS
0306	Tank, Lines, Fittings								
	Fuel Tank, Assembly	Inspect	.1						
		Service	.5						
0308	Engine Speed Governor								
	Governor	Test		.1				1,3,8	
		Replace		.7				1,3,8	
0312	Accelerator, Throttle Control								
	Throttle Control	Inspect	.1						
		Adjust		.2				1,8	
		Replace		.5				1,8	
	Choke Control	Adjust		.2				1,8	
		Replace		.5				1,8	
04	EXHAUST SYSTEM								
0401	Muffler and Pipe								
	Muffler and Pipe	Replace		1.5				1,8	
05	COOLING SYSTEM								
0501	Radiator								
	Radiator Assembly	Inspect	.1						
		Service		.5				1,8	
		Replace		1.5				1,8	
		Repair				3.0		1,6,8	
0503	Water Manifold								
	Thermostat & Housing	Test		.5				1,8	
		Replace		.5				1,8	
	Hoses, Lines and Fittings	Inspect	.1						
		Replace		1.5				1,8	

MAINTENANCE ALLOCATION CHART FOR
TRUCK, FORKLIFT, 4000 LB (144") PT, GED
MAKE: TCM AMERICA (61888) MODEL: FG30/N7 (T)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS
0504	Water Pump								
	Pump Assembly	Replace		1.5				1,8	
0505	Fan Assembly								
	Belt Drive	Inspect	.1						
		Adjust		.2				1,8	
		Replace		.5				1,8	
06	ELECTRICAL SYSTEM								
0601	Alternator	Test		.5				1,3,8	
		Replace		1.0				1,3,8	
	Drive Belt	Inspect	.1						
		Adjust		.2				1,8	
		Replace		.5				1,8	
0602	Regulator	Test		.5				1,3,8	
		Replace		.4				1,3,8	
0603	Starting, Motor								
	Starter	Test		.5				1,3,8	
		Replace		1.0				1,3,8	
		Repair			2.0			1,3,8	
	Solenoid	Test		1.0				1,3,8	
		Replace		.5				1,8	
0605	Ignition Components Distributor	Adjust		.5				1,3,8	
		Replace		.5				1,3,8	
	Ignition Coil	Test		.2				1,3,8	
		Replace		.3				1,3,8	
	Spark Plugs (each)	Adjust		.3				1,2,3,8	
		Replace		.2				1,2,8	

MAINTENANCE ALLOCATION CHART FOR
TRUCK, FORKLIFT, 4000 LB (144") PT, GED
MAKE: TCM AMERICA (61888) MODEL: FG30/N7 (T)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS
0607	Instrument or Engine								
	Control Panel								
	Gages, Switches,								
	Hourmeter	Inspect	.1						
		Test		.5				1,3,8	
		Replace		.7				1,3,8	
0608	Miscellaneous								
	Fuses	Replace		.1				1	
0609	Lights								
	Lights	Inspect	.1						
		Test		.2				1,3,8	
		Replace		.2				1,3,8	
0610	Sending Units & Warning Switches								
	Sending Units	Test		.2				1,3,8	
		Replace		.2				1,3,8	
0611	Horn								
	Horn Assembly	Inspect	.1						
		Test	.1						
		Replace		.5				1,3,8	
		Repair			.5			1,3,8	
0612	Batteries, Storage Batteries	Inspect	.1						
		Test		1.0				1,3,8	
		Service		.1					
		Replace		.5				1,3,8	

MAINTENANCE ALLOCATION CHART FOR
TRUCK, FORKLIFT, 4000 LB (144") PT, GED
MAKE: TCM AMERICA (61888) MODEL: FG30/N7 (T)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS
07	TRANSMISSION								
0705	Transmission Linkage	Inspect		.2				1	
	Controls	Adjust		.2				1,8	
		Replace		1.0				1,8	
		Repair		1.0				1,4,5,8	
0708	Torque Converter or Fluid Coupling								
	Torque Converter	Test			.5			1,8,9	
		Replace			5.0			1,8,9	
0710	Transmission Assembly								
	Transmission	Inspect	.2					1,8	
		Test			1.0			1,8,9	
		Service	.2					1,8	
		Replace			5.0			1,4,8	
		Repair			10.0			1,4,8,9	
		Overhaul				18.0		1,4,5,8, 9	
0721	Coolers, Pumps, Motors								
	Oil Pump	Test			.5			1,8,9	
		Replace			5.0			1,8	
		Repair				6.0		,1,8,9	
	Control Valve	Replace			1.5			1,4,8,9	
		Repair				3.0		1,4,8,9	
	Oil Filter	Service		.5				,1,8	
		Replace		.5				1,8	
	Oil Cooler (Torque Converter)	Inspect		.5					
		Replace			1.5			1,8	
		Repair			2.0			1,4,8,9	

MAINTENANCE ALLOCATION CHART FOR
TRUCK, FORKLIFT, 4000 LB (144") PT, GED
MAKE: TCM AMERICA (61888) MODEL: FG30/N7 (T)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS
10	FRONT AXLE								
1000	Front Axle Assembly								
	Front Axle	Service		.5				1,8	
		Replace			1.0			1,8	
1002	Differential Assembly								
	Differential Carrier Assembly	Service		.3				1	
		Replace			6.0			1,8	
		Repair				7.0		1,8	
		Overhaul				7.5		1,4,8	
11	REAR AXLE								
1104	Steering, Sideshaft & Wheel Leaning Mechanism								
	Rear Axle	Service		.3				1,8	
		Replace			2.0			1,8	
		Repair			3.0			1,8	
		Overhaul				5.0		1,8	
	Steering	Service		.2				1	
		Replace			2.0			1,8	
12	BRAKES								
1201	Hand Brake								
	Linkage	Adjust		.2				1	
		Replace		.5				1	
		Repair			1.0			1,8	
1202	Service Brake	Inspect		1.0				1,8	
		Replace			5.0	1,8			
		Repair			5.0	1,8			

MAINTENANCE ALLOCATION CHART FOR
TRUCK, FORKLIFT, 4000 LB (144") PT, GED
MAKE: TCM AMERICA (61888) MODEL: FG30/N7 (T)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS
1204	Hydraulic Brake System								
	Lines, Fittings and Hoses	Inspect		.2					
		Replace		1.5				1,8	
	Master and Wheel Cylinders	Inspect		.5				1,8	
		Replace		.5				1,8	
1206	Mechanical Brake System								
	Brake Pedal Assembly	Replace		.7				1,8	
13	WHEELS								
1311	Wheel Assembly/Wheel Bearings (each)	Inspect		.5				1,2,8	
		Adjust		.5				1,2,8	
		Replace		.7				1,8	
1313	Tires & Tubes (each)	Service	.1						
		Replace		.5				1,8	
		Repair		1.0				1,8	
14	STEERING								
1407	Power Steering Gear Assembly								
	Tie Rod Ends/Drag Links	Inspect		.2					
		Service		.7				1	
		Replace			2.0			1,4,8	
		Repair			1.0			1,4,8	
	Steering Column	Replace			3.0			1,8	
		Repair				4.0		1,4,5,8, 9	

MAINTENANCE ALLOCATION CHART FOR
TRUCK, FORKLIFT, 4000 LB (144") PT, GED
MAKE: TCM AMERICA (61888) MODEL: FG30/N7 (T)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS
1411	Hoses, Lines & Fittings								
	Hoses, Lines & Fittings	Inspect	.2						
		Replace		.7				1,8	
1412	Hydraulic Cylinders								
	Steering Cylinder	Inspect		.5					
		Replace			1.0			1,8	
1414	Flow Divider	Replace			1.0			1,8,9	
		Repair			3.0			1,8,9	
15	FRAME AND TOWING ATTACHMENTS								
1501	Frame Assembly								
	Frame Assembly	Replace			3.0			1,6,8,8	
1502	Counterweights								
	Counterweights	Replace		0.7				1,8	
18	BODY, CAB, HOOD AND HULL								
1801	Body, Cab & Hood								
	Body	Repair			2.0			1,6,7,8	
		Replace				8.0		1,6,7,8	
1805	Floors, Subfloors, &								
	Related Components								
	Seats	Adjust	.1						
		Replace		.2				1,8	

MAINTENANCE ALLOCATION CHART FOR
TRUCK, FORKLIFT, 4000 LB (144") PT, GED
MAKE: TCM AMERICA (61888) MODEL: FG30/N7 (T)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS
24	HYDRAULIC LIFT COMPONENTS								
2401	Hydraulic Pump								
	Pump, Hydraulic	Test			1.0			1,8,9	
		Replace			1.5			1,8	
		Repair			2.2			1,8,9	
2402	Manifold and/or Control Valves								
	Control Valve	Test			.5			1,8,9	
		Adjust			.5			1,8,9	
		Replace			2.0			1,8	
		Repair				3.0		1,8	
2403	Hydraulic Controls and/or Manual Controls								
	Controls, Levers and Linkages	Adjust		.2				1,8	
		Replace		.5				1,8	
2404	Tilt Cylinders and Tilt Crank								
	Cylinder Hydraulic Tilt (each)	Test			.5			1,8,9	
		Replace			.7			1,8	
		Repair			2.5			1,8,9	
2405	Mast Column								
	Lift Chains	Adjust		.2				1	
		Replace		.5				1,8	
	Mast Assembly	Adjust			1.0			1,8	
		Replace			2.0			1,8	

MAINTENANCE ALLOCATION CHART FOR
TRUCK, FORKLIFT, 4000 LB (144") PT, GED
MAKE: TCM AMERICA (61888) MODEL: FG30/N7 (T)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS
	Side Shift Cylinder	Test			.2			1,8,9	
		Replace			2.0			1,8	
		Repair			3.0			1,4,5,8, 9	
	Hydraulic Lift Cylinder (each)	Test			.5			1,8,9	
		Replace			1.0			1,8	
		Repair			2.0			1,4,5,8, 9	
2406	Strainers, Filters, Lines and Fittings								
	Hose, Lines & Fittings	Inspect		.5					
		Replace		.5				1,8	
	Strainers & Filter	Service		.5				1,8	
		Replace		.5				1,8	
2408	Liquid Tanks or Reservoirs								
	Hydraulic Reservoir	Inspect	.5						
		Service	.1	.5				1,8	
		Repair			1.0			1,6,7,8	

MAINTENANCE ALLOCATION CHART FOR
TRUCK, FORKLIFT, 4000 LB (144") PT, GED
MAKE: TCM AMERICA (61888) MODEL: FG30-N7(T)
3930-01-146-3990
(MD SOP 700-5)

SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
	UNLESS OTHERWISE NOTED, ALL MAINTENANCE FUNCTIONS CAN BE ACCOMPLISHED WITH THE TOOLS CONTAINED IN THE FOLLOWING COMMON TOOL SETS.			
1.	O, F, H	TOOL KIT AUTO MAINT: ORG Maint Common #2	4910-00-754-0650	LIN W32730
2.	0, F, H	WRENCH, TORQUE: 3/4 in. Drive, 100-500 ft lb cap.	5120-00-542-5577 (18876)	9033917
3.	F, H	SHOP EQUIP. FUEL & ELEC. SYSTEM ENGINE	4910-00-754-0714	T30414
4.	F, H	SHOP EQUIP. MACHINE SHOP	3470-00-754-0708	T15644
5.	F, H	TOOL KIT MACHINIST	5280-00-511-1950	W44512
6.	F, H	SHOP EQUIP. WELDING	4940-00-357-7268	T16714
7.	F, H	TOOL KIT BODY & FENDER REPAIR	5180-00-754-0643	W33689
8.	0, F, H	TOOL KIT MASTER MECH: EQUIP. MAINT. & REPAIR	5180-00-699-5273	LIN W 45060
9.	F, H	GAGE, HYDRAULIC PRESSURE From: 0 to 3000 lbs	6685-00-983-8326	H0278M (38508)

SECTION VI.

EXPENDABLE SUPPLIES AND MATERIALS LIST

SECTION I. INTRODUCTION

1. SCOPE

This SECTION lists expendable supplies and materials you will need to operate and maintain the Truck, Lift, Fork. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

2. EXPLANATION OF COLUMNS

a. Column (1) - Item number.

b. Column (2) National Stock Number. This is the National Stock Number assigned to the item; use it to request or requisition the item.

c. Column (3) Description. Indicates the Federal item name and, if required, a description to identify the item. The Federal Supply Code for Manufacturer (FSCM) in parenthesis and part number follows the description of the item.

d. Column (4) Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

EXPENDABLE SUPPLIES AND MATERIALS LIST
TRUCK, FORKLIFT, 4000 LB (144") PT, GED
MAKE: TCM AMERICA (61888) MODEL: FG30-N7(T)
3930-01-146-3990

(1) ITEM NUMBER	(2) NSN	(3) DESCRIPTION	(4) (U/I)
		GAA, GREASE, AUTOMOTIVE AND ARTILLERY (81349) MIL-G-10924	
1	9150-00-190-0904	1 lb can	LB
2	9150-00-190-0905	5 lb can	LB
3	9150-00-190-0907	35 lb can	LB
		OIL LUBRICATION, ENGINE (81349) MIL-L-2104	
4	9150-00-186-6668	OE/HDO 10 - 5 gal can	GL
5	9150-00-191-2772	OE/HDO 10 - 55 gal	GL
6	9150-00-188-9858	OE/HDO 30 - 5 gal can	GL
7	9150-00-188-9859	OE/HDO 30 - 55 gal	GL
		OIL LUBRICATION, ENGINE, ARTIC (81349) MIL-L-46167	
8	9150-00-402-2372	OEA - 5 gal	GL
		OIL LUBRICATION, GEAR (81349) MIL-L-2105	
9	9150-01-035-5392	80W/90 - 1 qt	QT
10	9150-01-035-5393	80W/90 - 5 gal	GL
11	9150-01-035-5394	80W/90 - 55 gal	GL
12	9150-01-035-5395	85W/140 - 5 gal	GL
13	9150-01-035-5396	85W/140 - 55 gal	GL
14	9150-01-035-5390	75W - 1 qt	QT
15	9150-01-035-5391	75W - 5 gal	GL
		BRAKE FLUID, SILICONE, AUTOMOTIVE (81349) MIL-B-46176	
16	9150-01-059-2586	1 gal (Metal Container)	GL
17	9150-01-102-9455	1 gal (Plastic Container)	GL
		COOLANT, 50/50 ETHYLENE GLYCOL/WATER (81349) MIL-A-46153	
18	6850-00-181-7929	1 gal	GL
19	6850-00-181-7933	5 gal	GL

EXPENDABLE SUPPLIES AND MATERIALS LIST
TRUCK, FORKLIFT, 4000 LB (144") PT, GED
MAKE: TCM AMERICA (61888) MODEL: FG30-N7(T)
3930-01-146-3990

(1) ITEM NUMBER	(2) NSN	(3) DESCRIPTION	(4) (U/I)
20	6810-00-249-9354	SULFURIC ACID, ELECTROLYTE (96906 MIL-STD-605 1 gal	GL
21	6850-00-264-9038	SOLVENT: DRY CLEANING (81348) FED SPEC PD680 5 gal can	GL

LUBRICANTS	CAPACITY	EXPECTED TEMPERATURE			INTERVALS
		ABOVE +15°F (ABOVE -9°C)	+40°F TO -15°F (+4°C TO -26°C)	+40°F TO -65°F (+4°C TO -54°C)	
OE/HDO- Oil, Lubrication, Engine		OE/HDO-10	OE/HDO-10	OE/HDO-10	
OEA-Oil, Lubrication, Engine, Arctic					
Oil Can Points (See Note 2)					
Hydraulic Reservoir See Note 4)	6.1 Gal (23L)				
Transmission (see Note 4)	1.7 Gal (6.4L)				
Engine Crankcase (See Note 4)	1.1 Gal (4.2L)	OE/HDO-30	OE/HDO-30	OEA	
85W/140-Oil, Lubrication, Gear					INTERVALS GIVEN ARE IN HOURS OF NORMAL OPERATION
80W/90-Oil, Lubrication, Gear					
75W-Oil, Lubrication Gear					
Differential	0.9 Gal (3.5L)				
Lift Chain					
GAA-Grease, Automotive and Artillery		ALL TEMPERATURES			
BFS-Brake Fluid, Silicone, Automotive	0.05 Gal (0.2L)				

NOTES:

1. For operation of equipment in protracted cold temperatures below -15°F (-26°C), remove lubricants prescribed in the key for temperatures above -15°F (-26°C). Relubricate with lubricants specified in the key for temperatures below -15°F (-26°C).

2. Oil Can Points. Every 200 hours lubricate pins and clevises and all exposed adjusting threads with OE.

3. Accelerator and Brake Linkage; Distributor Shaft and Cam Heel; Wheel Bearings. Every 25U hours inspect linkage. Apply a light coat Of GAA to sliding or friction surfaces except ball Joints,. Clean distributor shaft and cam heel and apply GAA to cam and wick. Do not apply grease excessively. Every 500 hours remove wheels, clean and inspect 31l parts, replace damaged or worn parts, repack bearing, and then reassemble.

4. Hydraulic Reservoir, Engine Crankcase and Transmission. Capacity includes w/filter.

5. Lubricants. The following is a list of lubricants with the Military Symbols and applicable specification numbers: OE/MIL-L-2104C, OEA/MIL-L-46167, 80W/90/MIL-L-2105C, 85W/140/MIL-L-2105C, 75W/MIL-L-2105C, BFS/MIL-B-46176, GAA/MIL-G-10924

SECTION VII.
Maintenance of New Vehicle

1. General: Your TCM America Model FG30N7(T) is normally shipped with the fuel tank drained and cooling system filled with 50/50 ethylene glycol/,water. The engine's crankcase, enclosed gears and the hydraulic system reservoirs are filled with the applicable type/'grade of lubricant. The truck has been completely lubricated.

2. Inspection Upon Delivery: For your protection, make a thorough inspection of the vehicle immediately upon delivery. Refer to Appendix E, for operator, Crew Preventive Maintenance Checks and Services. Notify the Transit Agent, Carrier at once of any noted deficiencies.

3. Maintenance and Operation:

a. IMPORTANT. For new vehicles, the first engine oil change will be preformed at the first 25 hours of operation, or after on week, whichever occurs first. Do not drain lubricants until the first required lubricant change, refer to Appendix E.

b. Regardless of season, warm up engine before operating (approximately 5 minutes). Avoid fast idling (rotation of engine at high speed without load, especially when engine is cold. Avoid jerky starts, extreme turns and undue hard braking.

SECTION VIII.

OPERATOR/CREW
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

GENERAL

Your Preventive Maintenance Checks and Services Table lists the inspections and care of your equipment required to keep it in good operating condition.

OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

1. The number column of your PMCS is the source for the number used on the TM Number Column on DA Form 2404.

2. The interval column of your PMCS Table tells you when to do a certain check or service.

   a. Before you operate. Perform your before (B) PMCS. Always keep in mind the WARNINGS and CAUTIONS.

   b. While you operate. Perform your during (D) PMCS. Always keep in mind the WARNINGS and CAUTIONS.

   c. Once a week. Perform your weekly (W) PMCS. Always keep in mind the WARNINGS and CAUTIONS.

3. The procedure column of your PMCS Table tells you how to do the required checks and services. Carefully follow these instructions. If you do not have the tools, or if the procedure tells you to, have organizational maintenance do the work.

4. If your equipment does not perform as required, refer to the troubleshooting section in this manual for possible problems. Report any malfunctions or failures on the proper DA Form 2404 or refer to DA Pamphlet 738-750.

NOTE

The terms ready/available and mission capable refer to the same status: Equipment is on hand and is able to perform its combat missions (see DA Pamphlet 738-750).

5. Equipment is not ready/available if: column. This column tells you when and why your equipment cannot be used.

6. Always do your PMCS in the same order so it gets to be a habit. Once you've had some practice, you will spot anything wrong in a hurry.

7. When you do your PMCS, take along a rag or two.

8. While performing PMCS, observe WARNINGS and CAUTIONS preceding those operations which could endanger your safety or result in damage to the equipment.

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Wear protective goggles and gloves and use only in a well-ventilated area. Avoid allowing solvent to contact skin, eyes, and clothes, and do not breathe vapors. Do not use near open flame or excessive heat. If you become dizzy while using cleaning solvent, get fresh air and medical aid immediately. If solvent comes in contact with skin or clothing, wash with water. If solvent gets in your eyes, flush eyes with water and get medical aid immediately. Flash point of solvent is 138°F (59°C).

a. Keep it clean. Dirt, grease, oil and debris only get in the way and may cover up a serious problem. Clean as you work and as needed. Use dry cleaning solvent (P-D-680) to clean metal surfaces. Use soap and water when you clean rubber or plastic material.

b. Bolts, nuts and screws. Check that they are not loose, missing, bent or broken. You can't try them all with a tool, but look for chipped paint, bare metal or rust around bolt heads. Tighten any bolt, nut, or screw that you find loose.

c. Welds. Look for loose or chipped paint, rust or gaps where parts are welded together. If you find a bad weld, report it to organizational maintenance.

d. Electric wires and connectors. Look for cracked or broken insulation, bare wires and loose or broken connectors. Report damaged or loose wiring to organizational maintenance.

e. Hoses and fluid lines. Look for wear, damage and leaks. Make sure clamps and fittings are tight. Wet spots show leaks but a stain around a fitting or connector can also mean a leak. If leakage comes from a loose fitting or connector, tighten the fitting or connector. If something is broken or worn out, report it to organizational maintenance.

f. Vehicle must be on level ground in order to get correct fluid level measurement.

9. It is necessary for you to know how fluid leaks affect the status of your equipment. The following are definitions of the types/classes of leakage you need to know to be able to determine the status of your equipment. Learn and be familiar with them and REMEMBER when in doubt, notify your supervisor.

LEAKAGE DEFINITIONS FOR OPERATOR/CREW PMCS

Class I	Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
Class II	Leakage of fluid great enough to form drops, but not enough to cause drops to drip from the item being checked/inspected.
Class III	Leakage of fluid great enough to form drops that fall from the item being checked/inspected.

CAUTION

Equipment operation is allowable with minor leakage's (Class I or II). Of course, consideration must be given to the fluid capacity in the item/system being checked/inspected. When operating with Class I or II leaks, continue to check fluid levels as required on your PMCS. Class III leaks should be reported to your supervisor or organizational maintenance.

Operator Crew Preventative Maintenance Checks and Services
NOTE: Within designated interval, these checks are to be performed in the order listed.

B—Before D—During W—Weekly

Item No.	Interval B	Interval D	Interval W	ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED.	Equipment Is Not Ready/ Available If:
				IMPORTANT: PERFORM WEEKLY (W) AS WELL AS BEFORE (B) OPERATIONS PMCS IF: 1. You are the assigned operator and have not operated the item since the last weekly. 2. You are operating the item for the first time.	
1				EXTERIOR OF VEHICLE	
	•			a. Check for leaks or appearance of leaks	Class III leaks or any fuel leak.
	•			b. Visually check overhead guard for obvious cracks in weld.	Obvious cracks in weld.
2				ENGINE OIL LEVEL	
	•			Check that oil level is between low (L) and high (H) marks on dipstick. Add oil if necessary.	
3				TIRES	
	•			Check for excessive wear, cuts, cracks, abrasions, low or flat tires. (Drive and steer tire pressure - 100 PS1.)	Tires worn, cut or damaged which could result in failure during operation. Tire missing, flat or unserviceable.
4				HORN	
	•			Check horn by depressing horn button.	
5				STEERING	
		•		Check that truck steers free and easy	Steering sticks or truck is hard to steer.

Operator Crew Preventative Maintenance Checks and Services
NOTE: Within designated interval, these checks are to be performed in the order listed.

B—Before D—During W—Weekly

Item No.	Interval B	Interval D	Interval W	ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED.	Equipment Is Not Ready/ Available If:
6		•		BRAKES Check for chatter, rubbing, uneven stopping, pulling and/or unusual noise	Brakes will not stop the travel of truck.
7		•		ACCELERATOR Check that truck accelerator operates smoothly.	Accelerator sticks.
8		•		LIGHTS Check that lights are operative.	
9		•		LIFT LEVER Check that lifting and lowering is smooth and responsive	Lift is uncontrollable, operates erratically or fails to operate.
10		•		TILT LEVER Check that forward and backward tilt is smooth and responsive	Tilt is uncontrollable, operates erratically or fails to operate.
11		•		INSTRUMENT PANEL **NOTE** Items 10a and lob, lamps should illuminate when ignition is "ON" and extinguish when engine starts. a. Check charge lamp for proper indications	Lamp does not illuminate with ignition "ON" or lamp remains lit after engine starts.
		•		b. Check engine oil pressure lamp for proper indications	Lamp does not illuminate with ignition "ON" or lamp remains lit after engine starts.

Operator Crew Preventative Maintenance Checks and Services
NOTE: Within designated interval, these checks are to be performed in the order listed.

B—Before D—During W—Weekly

Item No.	Interval B	Interval D	Interval W	ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED.	Equipment Is Not Ready/ Available If:
		•		c. After achieving operating temperature, check that coolant temperature gage needle remains within the green zone.	Needle in red zone.
12				AUTOMATIC TRANSMISSION (TORQUE CONVERTER)	
			•	a. Check through opening of the floor inspection cover that fluid level is between lower and upper mark of dipstick.	
		•		b. Forward-Reverse Lever - Check transmission for proper operation throughout each gear position.	Truck does not respond in desired gear selection.
13				HYDRAULIC RESERVOIR NOTE Oil level check should be done with engine "OFF," forks on ground or floor with truce on level surface.	
			•	Check that oil is between the low (L) and the high (H) marks on dipstick.	
14				RADIATOR	
			•	Check that coolant is visible at bottom of filler neck.	
15				FAN BELT	
			•	Check belt for loose, worn, cracked or frayed condition	Belt is missing, broken or damaged.
16				AIR CLEANER	
			•	a. Check element for contamination or damage.	
			•	b. Check rubber seal for cracks or excessive deterioration	Seal is missing or damaged.

Operator/Crew Preventive Maintenance Checks and Services

NOTE: Within designated interval, these checks are to be performed in the order listed.

B—Before D—During W—Weekly

Item No.	Interval B	Interval D	Interval W	ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED.	Equipment Is Not Ready/ Available If:
17.				BATTERY **WARNING** DO NOT SMOKE, OR ALLOW ANY FLAME OR SPARK IN THE VICINITY WHILE CHECKING OR FILLING THE BATTERY. THE BATTERY GENERATES HYDROGEN, A HIGHLY EXPLOSIVE GAS.	
			•	a. Check electrolyte level. If level of electrolyte is below the top of the battery plates, notify Organizational Maintenance.	
			•	b. Check battery and battery box for corrosion and obvious damage.	Battery missing/engine will not crank.

ORGANIZATIONAL
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

GENERAL

To make sure that your vehicle is ready for operation at all times, inspect it systematically so you can discover any defects and have them corrected before they result in serious damage or failure. The table on the next pages contain your organizational PMCS. The item numbers indicate the sequence of minimum inspection requirements. If you're operating the vehicle and notice something wrong which could damage the equipment if you continue operation, stop operation immediately.

Record all deficiencies and shortcomings, along with the corrective action taken on DA Form 2404. The Item Number Column is the source for the numbers used on the TM Number Column on DA Form 2404.

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

1. The item numbers of the table indicate the sequence of the PMCS. Perform at the intervals shown below.

    a. Do your (A) PREVENTIVE MAINTENANCE annually (once every year).

    b. Do your (H) PREVENTIVE MAINTENANCE at the hour interval listed.

2. If something does not work, troubleshoot it according to the instructions in this manual or notify your supervisor.

3. Always do your preventive maintenance in the same order so it gets to be a habit. Once you've had some practice, you will spot anything wrong in a hurry.

4. If anything looks wrong and you can not fix it, write it down on your DA Form 2404. If you find something seriously wrong, report it to direct support as soon as possible.

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Wear protective goggles and gloves and use only in a well-ventilated area. Avoid allowing solvent to contact skin, eyes, and clothes, and do not breathe vapors. Do not use near open flame or excessive heat. If you become dizzy while using cleaning solvent, get fresh air and medical aid immediately. If solvent comes in contact with skin or clothing, wash with water. If solvent gets in your eyes, flush eyes with water and get medical aid immediately. Flash point of solvent is 1380F (590C).

a. Keep it clean. Dirt, grease, oil and debris only get in the way and may cover up a serious problem. Clean as you work and as needed. Use dry cleaning solvent (P-D-680) to clean metal surfaces. Use soap and water when you clean rubber or plastic material.

b. Bolts, nuts and screws. Check that they are not loose, missing, bent or broken. You can't try them all with a tool, but look for chipped paint, bare metal or rust around bolt heads. Tighten any bolt, nut, or screw that you find loose.

c. Welds. Look for loose or chipped paint, rust or gaps where parts are welded together. If you find a bad weld, report it to direct support.

d. Electric wires and connectors. Look for cracked or broken insulation, bare wires and loose or broken connectors. Tighten loose connections and make sure the wires are in good condition.

e. Hoses and fluid lines. Look for wear, damage and leaks. Make sure clamps and fittings are tight. Wet spots show leaks, but a stain around a fitting or connector can also mean a leak. If leakage comes form a loose fitting or connector, tighten the fitting or connector. If something is broken or worn out, either correct it or report it to direct support.

5. It is necessary for you to know how fluid leaks affect the status of your equipment. The following are definitions of the types/classes of leakage you need to know in order to determine the status of your equipment. Learn and be familiar with them and REMEMBER - when in doubt, notify your supervisor.

LEAKAGE DEFINITIONS FOR ORGANIZATIONAL PMCS

Class I	Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
Class II	Leakage of fluid great enough to form drops, but not enough to cause drops to drip from the item being checked/inspected.
Class III	Leakage of fluid great enough to form drops that fall from the item being checked/inspected.

Organizational Preventive Maintenance Check and Services

A-Annually **H-Hours**

Item No.	Interval A	Interval H	Item To Be Inspected Procedure: Check For And Repair, Fill Or Adjust As Necessary.
			NOTE Perform Operator/Crew PMCS prior to or in conjunction with Organization PMCS if: a. There is a delay between the daily operation of the equipment and the Organization PMCS. b. Regular operator is not assisting/participating.
1.			ENGINE OIL
		200	Drain oil and replace engine oil filter with truck on level surface (ref. para 4-1-3-5(1), (2)). Refill to bring oil level between "L" and "H" level on dipstick.
2.			LUBRICATION
		250	Perform all lubrication services (ref. Section 2, TM 10-3930-653-14'P). Check for loose, bent or worn parts.
3.			AIR CLEANER
		250	Replace air cleaner (ref. para 4-1-3-4). Clean and inspect rubber seal for damage.
4.			FUEL FILTER
		250	Remove filter element from fuel filter and clean (ref. para 4-1-3-4(2)). Check for evidence of fuel leakage.
5.			SPARK PLUGS
		250	Check condition of individual spark plugs and wires. Clean or replace; adjust to proper gap. Tighten and torque 13 to 17 ft lb (ref. para 4-1-3-3(4)).
6.			FAN BELT
		250	Check fan belt for correct tension and damage (ref. para 4-1-3-2(3)).
7.			DISTRIBUTOR
		250	a. Check condition of points. Check or replace and adjust to proper gap (ref. para 4-1-3-3(2), (6)).
		250	b. Check ignition timing (ref. para 4-1-3-3(3)).

Organizational Preventive Maintenance Check and Services

A-Annually **H-Hours**

Item No.	Interval A	Interval H	Item To Be Inspected Procedure: Check For And Repair, Fill Or Adjust As Necessary.
8.			CARBURETOR
		250	a. Check carburetor for proper idle RPM and mixture ratio.
		250	b. Check emission control and ventilation hoses (ref. para 4-1-3-4(4)).
9.			BATTERY
			WARNING DO NOT SMOKE, OR ALLOW ANY FLAME OR SPARK IN THE VICINITY WHILE CHECKING OR FILLING BATTERY. THE BATTERY GENERATES HYDROGEN, A HIGHLY EXPLOSIVE GAS.
		250	a. Test battery to determine cell condition.
		250	b. Clean top and terminals. Insure all connections are tight (ref. TM 9-6140-200-14).
10.			TRANSMISSION
		500	Drain oil and replace transmission line filter. Refill to bring oil level between lower and upper marks on dipstick (ref. page 3-9, Power Train, TM 10-3930-653-14&P).
11.			BRAKES
		500	a. Inspect brake/linings and wheel cylinder for excessive wear and for evidence of leakage.
		500	b. Check and repack wheel bearings.
		500	c. Check brake level in reservoir. Level should be between the two seams of the reservoir.
12.			DIFFERENTIAL
		1000	Drain and refill differential. Check for leakage (ref. page 2-10, TM 10-3930-653-14&P).

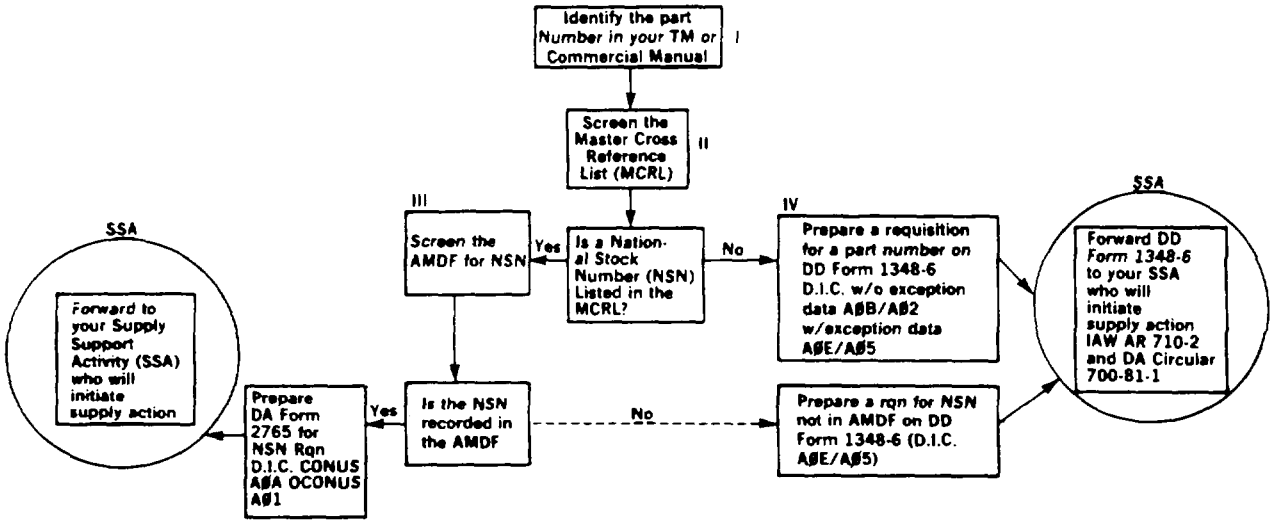
Organizational Preventive Maintenance Check and Services

A-Annually **H-Hours**

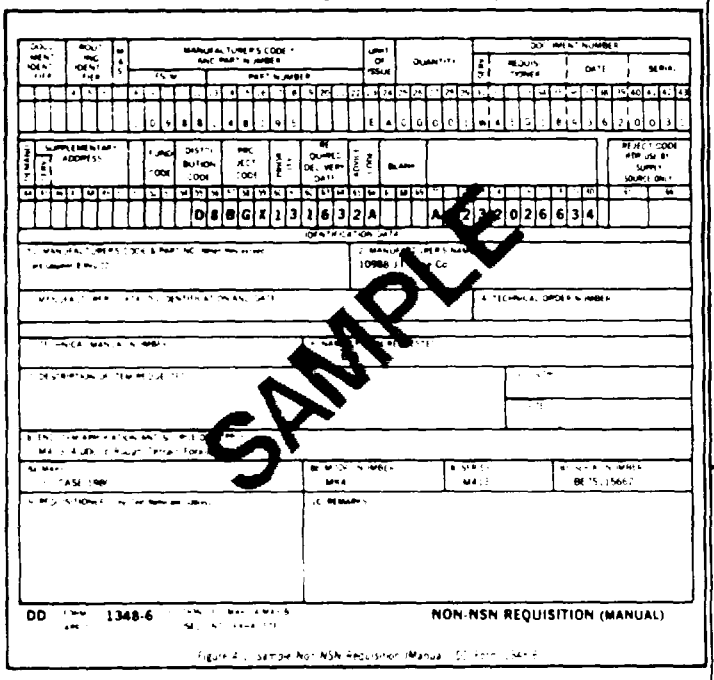
Item No.	Interval A	Interval H	Item To Be Inspected Procedure: Check For And Repair, Fill Or Adjust As Necessary.
13.			HYDRAULIC SYSTEM
			NOTE **When checking oil level, insure that engine is shut down, forks are on the ground or floor and that the truck is on a level surface.**
		1200	a. Replace hydraulic oil return filter.
		1200	b. Clean hydraulic oil suction filter. Check condition of oil suction filter gasket.
		1200	c. Drain and refill to bring oil level between the two slots: high and low.
14.			RADIATOR
	•		Check coolant for antifreeze and corrosion protection and inspect tooling system for heavily rusted or partially clogged cooling system (ref. TB 750-651).

SECTION IX.
PRESCRIBED LOAD LIST/AUTHORIZED STOCKAGE LIST

END ITEM: Truck, Forklift, 4000 LB (144") PT: GED				MAKE: TCM AMERICA (61888)		MODEL: F(30-N7(T)			
NSN: 3930-01-146-3990		CONTRACT NO. DAAE07-82-C-6720				DATE:			
SMR CODE	NSN	PRIME P/N	FSCM	PART DESCRIPTION	UNIT PRICE	U/M	QTY OF PARTS REQ'D FOR NO. OF END ITEMS			
							PLL	ASL		
							1-5	1-5	6-20	21-50
PAOZZ	2940-01-150-9445	6437982	70040	Filter, Engine Oil	4.83	EA	2		4	
PAOZZ	2920-00-540-8300	14G5	19728	Plug, Spark	.47	EA	4		8	
PAOZZ-	2920-01-167-3737	SRP-2227	19728	Points	2.80	EA	1	2		
PAOZZ	5910-01-170-5948	SRP-2150	19728	Condenser	1.79	EA	1	2		
PAOZZ	2920-01-159-0869	N-22157-H1001	61888	Rotor	2.16	EA	1	2		
PAOZZ	6240-00-013-1282	W-L-00111/61	81348	Bulb	.19	EA	2		4	
PA+OZZ	5920-00-539-6920	F03A125V30A	81349	Fuse	.64	EA	1	2		
PAOZZ	5920-00-879-6285	F02A125V10AS	81349	Fuse	.84	EA	2		4	
PAOZZ	2940-01-159-0956	N-16546-L3000	61888	Element, Air Cleaner	12.50	EA	1	2		
PAOZZ	3030-00-864-7398	N-11720-L1102	61888	Belt, Fan	3.40	EA	1	2		
PAOZZ	6240-01-157-2935	78260-69350	61888	Lamp, Headlight	6.00	EA	1	2		
PAOZZ	6240-00-889-1799	1157	08108	Lamp, Tail Light	22	. EA	1	2		
	The Federal Supply Code for Manufacturer IFSCM) for TCM America is (61888).									


Identify the part Number in your TM or Commercial Manual
I
Screen the Master Cross Reference List (MCRL)
II
Is a National Stock Number (NSN) Listed in the MCRL?
Yes
No
III
Screen the AMDF for NSN
IV
Prepare a requisition for a part number on DD Form 1348-6 D.I.C. w/o exception data AØB/AØ2 w/exception data AØE/AØ5
SSA
Forward DD Form 1348-6 to your SSA who will initiate supply action IAW AR 710-2 and DA Circular 700-81-1
SSA
Forward to your Supply Support Activity (SSA) who will initiate supply action
Prepare DA Form 2765 for NSN Rqn D.I.C. CONUS AØA OCONUS AØ1
Yes
Is the NSN recorded in the AMDF
No
Prepare a rqn for NSN not in AMDF on DD Form 1348-6 (D.I.C. AØE/AØ5)

NON-NSN REQUISITION (MANUAL)



LEGEND FOR 1348-6

CARD COLUMNS	CONUS	OCONUS
1-3 DOC Ident Code -		
PN w/o Exception Data	AØB	AØ2
PN w/Exception Date	AØE	AØ5
NSN Not in AMDF	AØE	AØ5

4-7 (LV Blank - SSA will complete)

8-22 For Non NSN: Fed Supply Code for Manufacturer (FSCM followed by Part Number (obtain from TM or Commercial Manual)

8-22 For NSN not in AMDF - enter NSN

57-59 Project Code:	MHE	CCE
CONUS	BGX	BGW
OCONUS	JZM	JZC

Reference Code for Cols 71-80:
- A - Technical Order or Tech Manual.
- B - End Item Application.
- C - Noun Description of Item.
- D - Drawing or Specification Number.

Identification of reference Data specified in Col. 70.

NOTE: All other entries will be made IAW AR 710-2/725-50. *Project Codes are mandatory entries.*

MANUAL BLOCKS:

BLOCK 1. Mfg Code & PN - Enter applicable FSCM and PN when they exceed Cols 8-22. (Cols 8-22 will be left blank).

BLOCKS 2-8. Enter applicable data (obtain from TM or Commercial Manual).

BLOCKS 8a-8d. Obtain data from vehicle data plate.

BLOCK 9. Self explanatory.

BLOCK 10. Enter any applicable exception data such as "NSN not in AMDF"

APPENDIX C

ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE

REPAIR PARTS AND SPECIAL TOOLS LIST

SECTION I. INTRODUCTION

1. Scope.

This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (CMDE); and other special support equipment required for performance of organizational, direct support, and general support maintenance of the fork lift truck, 4000 lb. capacity. It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the source, maintenance and recoverability (SMR) codes.

2. General.

In addition to Section I, *Introduction*, this Repair Parts and Special Tools List is divided into the following sections:

a. Section II. Repair Parts List. A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Bulk materiels are listed in item name sequence. Repair parts kits are listed separately in their own functional group within Section II. Repair parts for reparable special tools are also listed in this section. Items listed are shown on the associated illustration(s)/figure(s).

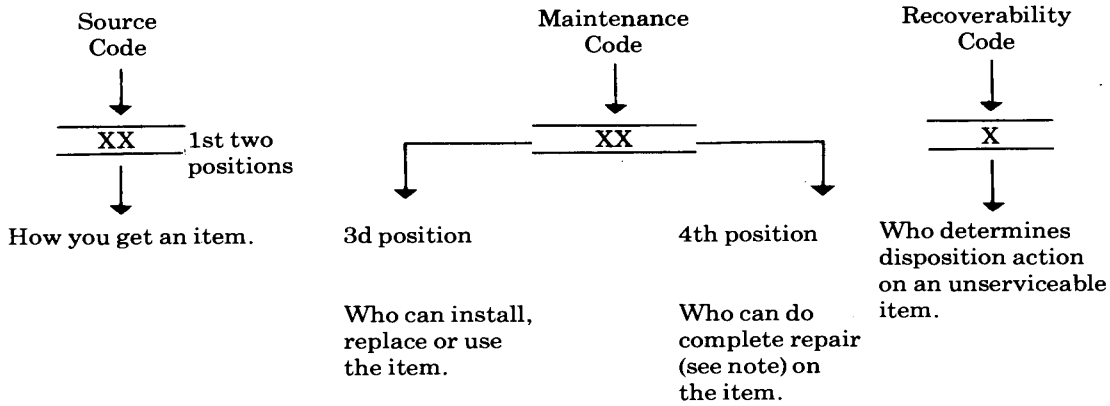
b. Section III. Special Tools List. A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL [as indicated by Basis of Issue (BOI) information in the DESCRIPTION AND USABLE ON CODE column] for the performance of maintenance.

c. Section IV. Cross-reference Indexes. A list, in National Item Identification Number (NIIN) sequence, of all National stock numbered items appearing in the listing, followed by a list in alphanumeric sequence of all part numbers appearing in the listings. National stock numbers and part numbers are cross-referenced to each illustration/figure and item number appearance. The figure and item number index lists figure and item numbers in alphanumeric sequence and cross-references NSN, CAGE, and part numbers.

3. Explanation of Columns (Sections II and III).

a. ITEM NO. [Column (1)]. Indicates the number used to identify items called out in the illustration.

b. SMR CODE [Column (2)]. The Source, Maintenance, and Recoverability (SMR) code is a 5-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instruction, as shown in the following breakout:



* *Complete Repair:* Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "*Repair*" function in a use/user environment in order to restore serviceability to a failed item.

3. Explanation of Columns (Sections II and III) (Con't).

(1) Source Code. The source code tells you how to get an Item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

Code	*Application/Explanation*
PA PB PC PD PE PF PG	Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the 3rd position of the SMR code. ***Items coded PC are subject to deterioration.*
KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied
MO – Made at UM/AVUM Level *MF – Made at DS/AVUM Level* *MH – Made at GS Level* *ML – Made at Special-Ized Repair Activity (SRA)* *MD – Made at Depot*	Items with these codes are not to be requested/requisitioned individually. They must be made from bulk materiel which is identified by the part number in the *DESCRIPTION AND USABLE ON CODE (UOC)* column and listed in the bulk materiel group of the repair parts list in this RPSTL. If the item is authorized to you by the 3d position code of the SMR code, but the source code indicates it is made at a higher level, order the
MO – Made at UM/AVUM Level *MF – Made at DS/AVUM Level* *MH – Made at GS Level* *ML – Made at Special-Ized Repair Activity (SRA)* *MD – Made at Depot*	Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicted by the source code. If the 3d position code of the SMR code authorizes you to replace the item, but the source code indicates that the item is assembled at a higher

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source

3. Explanation of Columns (Sections II and Ill) (Con't).

XC - Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer's part number.

XD - Item is not stocked. Order an "XD"-coded item through normal supply channels using the FSCM or CAGE and part number given, if no NSN is available.

(2) Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to use and repair support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

(a) The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following levels of maintenance.

Code	*Application/Explanation*
C	- Crew or operator maintenance done within unit maintenance or aviation unit maintenance.
O	- Unit maintenance or aviation unit can remove, replace, and use the item.
F	- Direct support or aviation Intermediate level can remove, replace, and use the item.
H	- General support level can remove, replace, and use the item.
L	- Specialized repair activity can remove, replace, and use the item.
D	- Depot level can remove, replace, and use the item.

NOTE

Some limited repair may be done on the Item at a lower level of maintenance, If authorized by the Maintenance Allocation Chart (MAC) and SMR codes.

(b) The maintenance code entered in the fourth position tells whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized "Repair" functions). This position will contain one of the following maintenance codes:

Code	*Application/Explanation*
O	- Unit maintenance or aviation unit is the lowest level that can do complete repair of the item.
F	- Direct support or aviation intermediate is the lowest level than can do complete repair of the item.
H	- General support is the lowest level that can do complete repair of the item.
L	- Specialized repair activity Is the lowest level that can do complete repair of the item.
D	- Depot is the lowest level that can do complete repair of the item.
Z	- Nonreparable. No repair is authorized.
B	- No repair is authorized. (No parts or special tools are authorized for the maintenance of a "B"-coded item.) However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

3. Explanation of Columns (Sections II and III) (Con't).

(3) Recoverability Code. Recoverability codes are assigned to items To indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR code as follows:

Code	*Application/Explanation*
Z	- Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the 3d position of the SMR code.
O	- Reparable item. When uneconomically reparable, condemn and dispose of the item at unit maintenance or aviation unit level.
F	- Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support or aviation intermediate level.
H	- Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.
D	- Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
L	- Reparable item. Condemnation and disposal of item not authorized below specialized repair activity (SRA).
A	- Item requires special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/ directives for specific instructions.

c. FSCM or CAGEC [Column (3)]. The Federal Supply Code for Manufacturer (FSCM) or the Commercial and Government Entity (CAGE) Code (C) is a 5-digit alphanumeric code which is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

NOTE

When you use an NSN to requisition an Item, the item you receive may have a different part number from the part ordered.

d. PART NUMBER [Column (4)]. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

e. DESCRIPTION AND USABLE ON CODE (UOC) [Column (5))]. This column includes the following information:

(1) The Federal item name and, when required, a minimum description to identify the item.

(2) Physical security classification. Not Applicable.

(3) Items that are included in kits and sets are listed below the name of the kit or set on Figure KIT.

(4) Spare/repair parts that make up an assembled item are listed immediately following the assembled item line entry.

(5) Part numbers for bulk materiels are referenced in this column in the line item entry for the item to be manufactured/fabricated.

3. Explanation of Columns (Sections II and III) (Con't).

(6) When the item is not used with all serial numbers of the same model, the effective serial numbers are shown on the last line(s) of the description (before UOC). Not Applicable.

(7) The usable on code, when applicable (see paragraph 5, Special Information).

(8) In the Special Tools List section, the Basis of Issue (BOI) appears as the last line(s) in the entry for each special tool, special TMDE, and other special support equipment. When density of equipments supported exceeds density spread indicated in the Basis of Issue, the total authorization is increased proportionately.

(9) The statement "END OF FIGURE" appears just below the last item description in Column 5 for a given figure in both Section II and Section I11.

f. QTY [Column (6)]. The QTY (quantity per figure) column indicates the quantity of the Item used in the breakout shown on the illustration/figure, which is prepared for a functional group, subfunctional group, or an assembly. A 'V" appearing in this column in lieu of a quantity indicates that the quantity is variable and the quantity may vary from application to application.

4. Explanation of Columns (Section IV).

a. National Stock Number (NSN) Index.

(1) *STOCK NUMBER* column. This column lists the NSN by National Item Identification Number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN (i.e., NSN 5305-01-674-1467). When using this column to locate an item, ignore the first 4 digits of the NSN. However, the complete NSN should be used when ordering items by stock number. NIIN

(2) FIG. column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in Section II and Section III.

(3) ITEM column. The item number identifies the item associated with the figure listed in the adjacent FIG. column. This Item is also identified by the NSN listed on the same line.

b. Part Number Index. Part numbers In this index are listed by part number In ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

(1) *CAGEC* column. The Commercial and Government Entity (CAGE) Code (C) is a 5-digit alphanumeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

(2) *PART NUMBER* column. Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards and inspection requirements to identify an item or range of items.

(3) *STOCK NUMBER* column. This column lists the NSN for the associated part number and manufacturer identified in the PART NUMBER and CAGEC columns to the left.

(4) *FIG.* column. This column lists the number of the figure where the item is identified/located in Section II and Section III.

(5) *ITEM* column. The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

4. Explanation of Columns (Section IV) (Con't).

c. Figure and Item Number Index.

(1) *FIG.* column. This column lists the number of the figure where the item is identified/located in Sections II and III.

(2) *ITEM* column. The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

(3) *STOCK NUMBER* column. This column lists the NSN for the item.

(4) *CAGEC* column. The Commercial and Government Entity (CAGE) Code (C) is a 5-digit alphanumeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

(5) *PART NUMBER* column. Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards and inspection requirements to identify an item or range of items.

5. Special Information.

a. Usable On Code. The usable on code appears in the lower left comer of the Description column heading. Not Applicable.

b. Fabrication Instructions. Bulk materiels required to manufacture items are listed in the Bulk Materiel Functional Group of this RPSTL. Not Applicable.

c. Assembly Instructions. Detailed assembly instructions for items source coded to be assembled from component spare/repair parts are found in Section 4. Items that make up the assembly are listed immediately following the assembly item entry or reference is made to an applicable figure.

d. Kits. Line item entries for repair parts kits appear in group 9401 in Section II.

e. Index Numbers. Items which have the word BULK in the FIG. column will have an index number shown in the item column. This index number is a cross-reference between the National Stock Number/Part Number Index and the bulk materiel list in Section Ii.

6. How To Locate Repair Parts.

a. When National Stock Number or Part Number is Not Known:

(1) First. Using the Table of Contents, determine the assembly group or subassembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.

(2) Second. Find the figure covering the assembly group or subassembly group to which the item belongs.

(3) Third. Identify the item on the figure and use the Figure and Item Number Index to find the NSN.

b. When National Stock Number or Part Number is Known:

(1) First. Using the National Stock Number or Part Number Index, find the pertinent National Stock Number or Part Number. The NSN Index is in National Item Identification Number (NIIN) sequence [see paragraph 4.a(1)]. The part numbers in the Part Number Index are listed in ascending alphanumeric sequence (see paragraph 4.b). Both Indexes cross-reference you to the illustration/figure and item number of the item you are looking for.

6. How To Locate Repair Parts (Con't).

(2) Second. Turn to the figure and item number, verify that the item is the one you're looking for, then locate the item number in the repair parts list for the figure.

7. Abbreviations.

For standard abbreviations see MIL-STD-12D, Military Standard Abbreviations for Use on Drawings, Specifications, Standards, and in Technical Documents.

Abbreviations	Explanation
NIIN	National Item Identification Number
	(consists of the last 9 digits of the NSN)
RPSTL	Repair Parts and Special Tools Lists

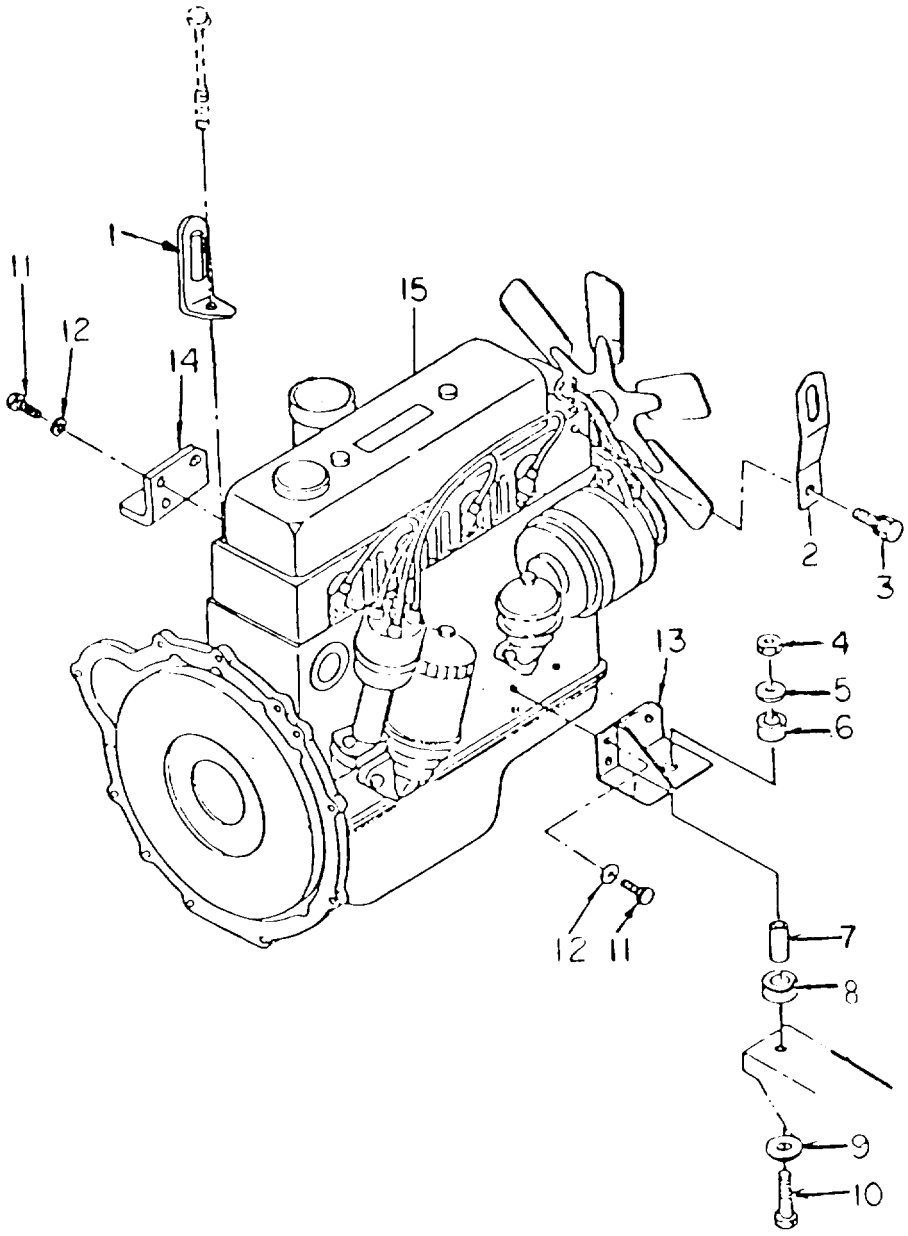


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FIGURE 1. ENGINE ASSEMBLY, MIOUNTING

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 01 ENGINE	
				GROUP 0100 ENGINE ASSEMBLY	
				FIG. 1 ENGINE ASSEMBLY, MOUNTING	
	PFHZZ	61888	N-10103-482520	ENGINE BLOCK ASSEMB INCLUDES FIG. 2	1
1	PFFZZ	61888	N-10006-32200	BRACKET, ANGLE	1
2	PFFZZ	61888	N-10004-14600	BRACKET, DOUBLE ANG	1
3	PFFZZ	61888	N-08121-01662	BOLT, ASSEMBLED WAS	1
4	PFFZZ	61888	23651-02011	NUT, SELF-LOCKING HE	2
5	PFFZZ	61888	N-17078-32200	DOME ASSEMBLY, AIR, F	2
6	PFFZZ	61888	23451-02031	RUBBER ROUND SEC	2
7	PFFZZ	61888	22431-02001	BUSHING, SLEEVE	2
8	PFFZZ	61888	22571-02011	RUBBER ROUND SEC	2
9	PFFZZ	61888	23651-02001	WASHER, FLAT	2
10	PFFZZ	61888	01103-10090	BOLT, MACHINE	2
11	PFFZZ	61888	N-08131-02510	BOLT, MACHINE	6
12	PFFZZ	61888	N-08915-24010	WASHER, LOCK	6
13	PFFZZ	61888	N-11213-K7215	BRACKET, ANGLE	1
14	PFFZZ	61888	N-11214-K7215	BRACKET, ANGLE	1
15	PFFHH	61888	23041-00102	ENGINE, GASOLINE	1

END OF FIGURE

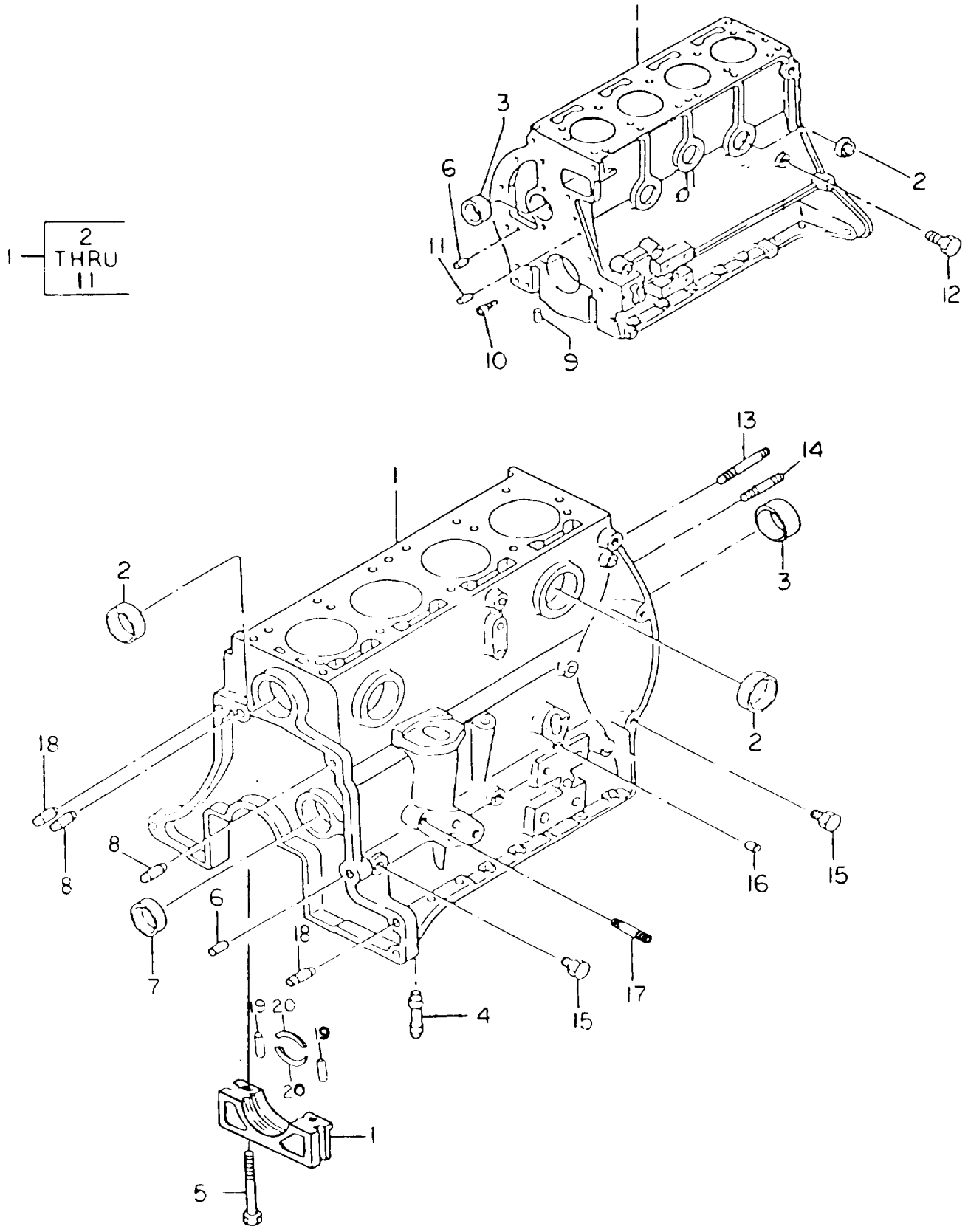

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FIGURE 2. CRANKCASE, BLOCK ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0101 CRANKCASE, BLOCK,	
				CYLINDER HEAD	
				FIG.2 CRANKCASE9 BLOCK ASSEMBLY	
1	PFHZZ	61888	N-11010-K7201	ENGINE BLOCK, GASOLI	1
2	PFHZZ	61888	N-01648-00084	.SPACER SET, RING	6
3	PFHZZ	61888	20801-08341	.SPACER, RING	1
4	PFHZZ	61888	N-15042-20100	.CONNECTOR, FLUID P	1
5	PFHZZ	61888	N-12293-P0500	.BOLT, SHOULDER	10
6	PFHZZ	61888	N-11024-KO100	.PIN,STRAIGHT, HEAD	2
7	PFHZZ	61888	N-11019-32200	.SPACER,RING	1
8	PFHZZ	61888	N-30412-P5100	.PIN,SHOULDER, HEAD	2
9	PFHZZ	61888	N-11024-78200	.PIN, STRAIGHT, HEAD	1
10	PFHZZ	61888	N-13081-78200	.SCREW, MACHINE	1
11	PFHZZ	61888	N-11023-32200	.PIN,STRAIGHT, HEAD	2
12	PFFZZ	61888	N-08931-30410	PLUG, MACHINE THRE	1
13	PFFZZ	61888	N-21077-Y4400	STUD, SHOULDERED	1
14	PFFZZ	61888	N-08213-85010	STUD, SHOULDERED	1
15	PFHZZ	61888	N-08931-30210	PLUG, MACHINE THRE	2
16	PFHZZ	61888	N-11023-78200	PIN, STRAIGHT, HEAD	1
17	PFFZZ	61888	N-08227-03010	STUD, SHOULDERED	2
18	PFFZZ	61888	N-30413-61700	PIN, SHOULDER, HEAD	2
* 19	KFHZZ	61888	N-12289-14600	SEAL, OIL, REAR CAP PART OF KIT P/N N-	2
				10101-L1125	5
* 20	KFHZZ	61888	N-12279-32200	SEAL, OIL, CRANKSHAFT PART OF KIT P/N N-10101-L1125	2

END OF FIGURE

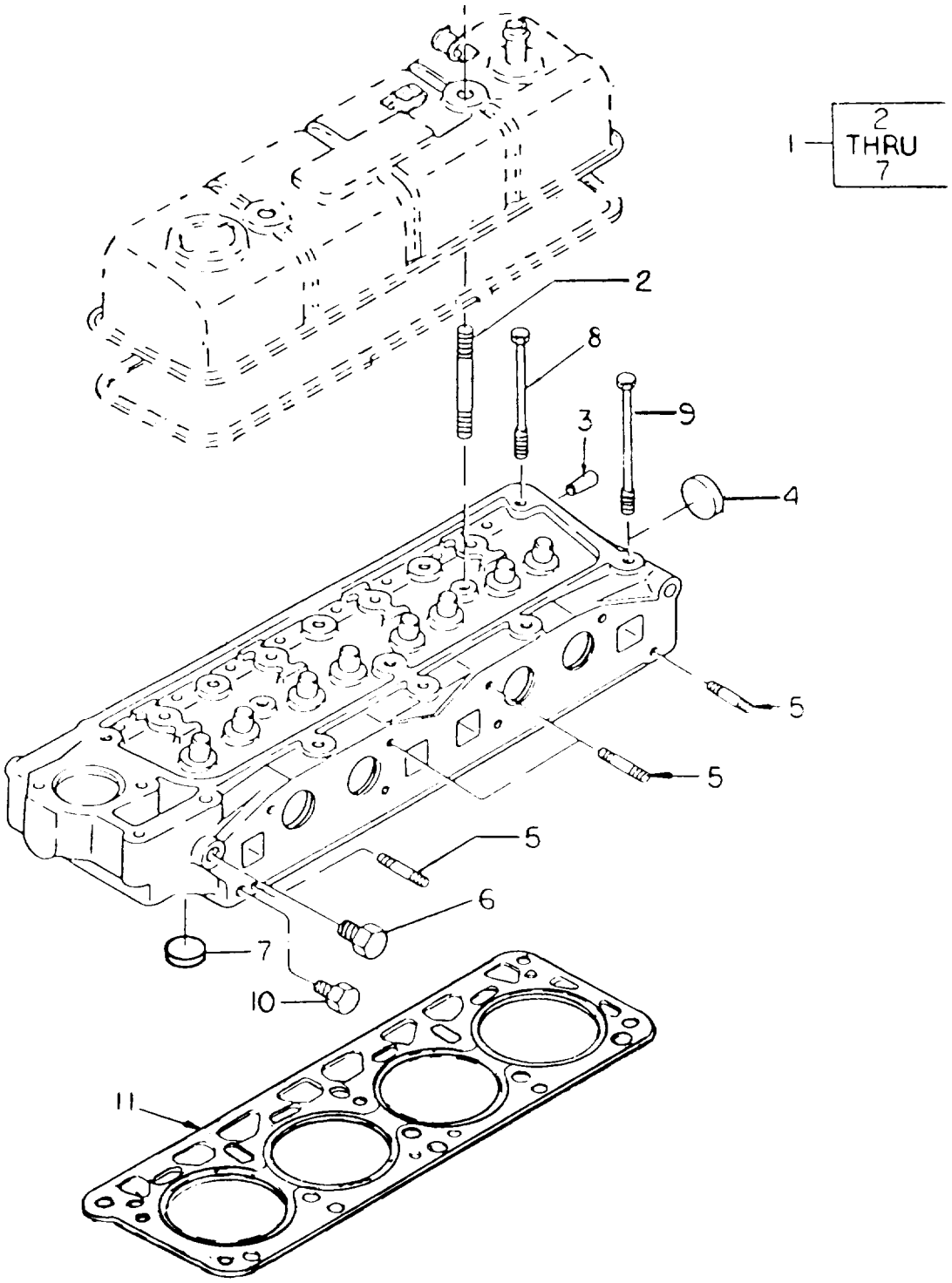

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FIGURE 3. CYLINDER HEAD ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0101 CRANKCASE, BLOCK,	
				CYLINDER HEAD	
				FIG.3 CYLINDER HEAD ASSEMBLY	
1	PFFZZ	61888	N-11042-B88655	CYLINDER HEAD, GASOL	1
2	XDFZZ	61888	N-11063-Y4400	.STUD, SHOULDERED	2
3	PFFZZ	61888	N-11065-24000	.PIN, TAPERED1PLAIN.....	4
4	PFFZZ	61888	N-01648-00084	.SPACER SET, RING	1
5	PFFZZ	61888	N-08223-83210	.STUD, SHOULDERED	6
6	PFFZZ	61888	N-08931-30610	.PLUG, TUBE FITTING, T	1
7	PFFZZ	61888	N-11099-P0502	.PLUG, EXPANSION	4
8	PFFZZ	61888	N-11056-78200	BOLT, EXTERNALLY RE	9
9	PFFZZ	61888	N-11057-78200	BOLT, EXTERNALLY RE	1
10	PFFZZ	61888	N-08931-30610	PLUG, TUBE FITTING, T	1
11	PFHZZ	61888	N-11044-P5101	GASKET PART OF KIT P/N N-10101-L1125	1
				END OF FIGURE	

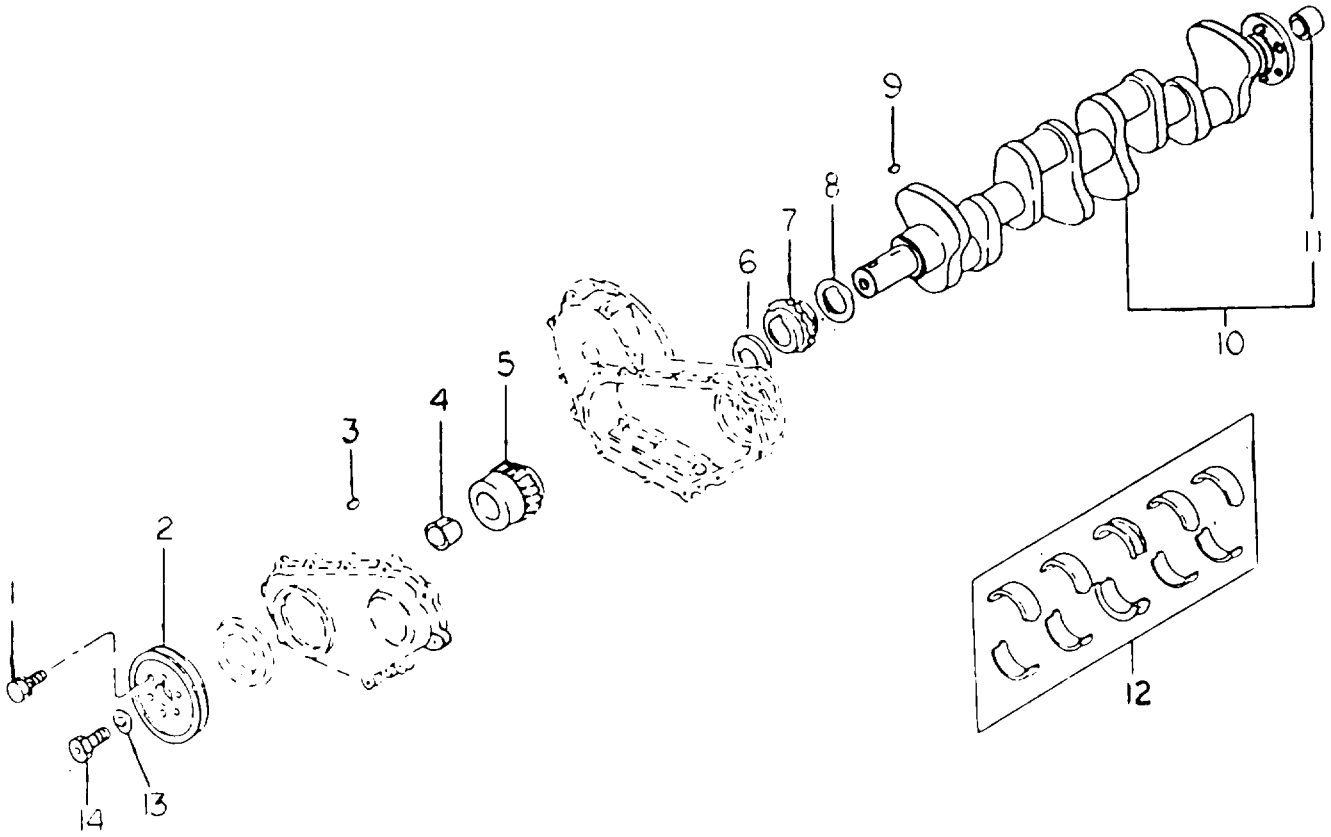

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FIGURE 4. CRANKSHAFT ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0102 CRANKSHAFT	
				FIG.4 CRANKSHAFT ASSEMBLY	
1	PFFZZ	61888	N-08120-62062	BOLT, ASSEMBLED WAS	6
* 2	XDFZZ	61888	N-12303-L1101	PULLEY, GROOVE	1
3	PFFZZ	61888	N-13022-48200	KEY,WOOORUFF	1
4	PFFZZ	61888	N-12307-48201	SPACER,SLEEVE	1
5	PFHZZ	61888	N-12351-L1100	GEAR, SPUR	1
6	PFHZZ	61888	N-12302-32200	THROWER, OIL CRANKSH	1
7	PFHZZ	61888	N-13021-73601	GEAR, SPUR	1
8	PFHZZ	61888	N-12299-32200	SPACER, RING	V
9	PFHZZ	61888	N-00926-51600	KEY, WOODRUFF	1
10	PFHZZ	61888	N-12200-78200	CRANKSHAFT, ENGINE	1
11	PFHZZ	61888	N-32202-30000	.BUSHING BLANK	1
* 12	PFHZZ	61888	N-12207-E0702	BUSHING HALF, SLEEV	1
* 12	PFHZZ	61888	20801-07231	BUSHING, SLEEVE	V
12	PFHZZ	61888	N-12210-E0702	BUSHING HALF,SLEEV	V
13	PFFZZ	61888	N-12308-L1101	WASHER,FLAT	1
14	PFFZZ	61888	N-12309-78200	BOLT, MACHINE,	1

END OF FIGURE

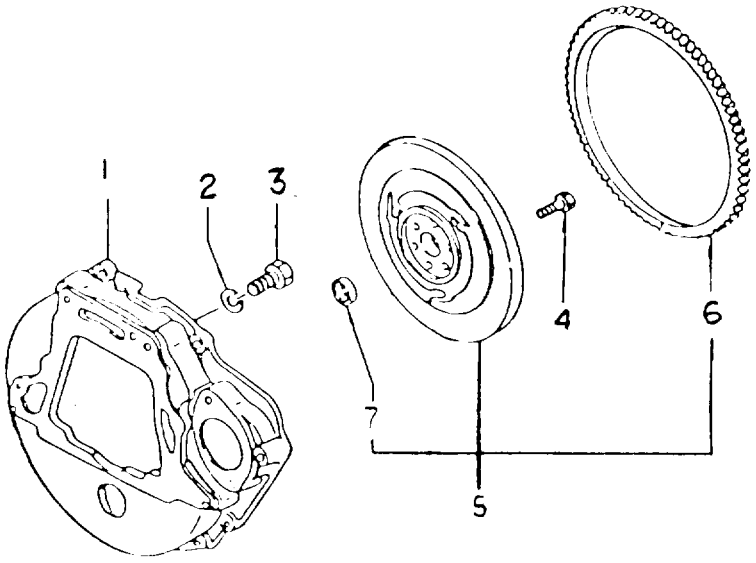

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FIGURE 5. FLYWHEEL ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0103 FLYWHEEL ASSEMBLY	
				FIG.5 FLYWHEEL ASSEMBLY	
1	PFFZZ	61888	N-30401-L1001	HOUSING, MECHANICAL	1
2	XDFZZ	61888	N-08915-24010	WASHER1LOCK	4
3	PFFZZ	61888	N-08131-02810	BOLT, MACHINE	4
4	PFFZZ	61888	N-12315-78200	BOLT, MACHINE	6
5	PFFZZ	61888	N-12310-K7215	FLYWHEEL, ENGINE	1
6	PFFZZ	61888	N-12312-L11O1	.GEAR, SPUR,	1
7	PFFZZ	52676	6202-2RSJHE	.BEARING, BALL, ANNULA	1
				END OF FIGURE	

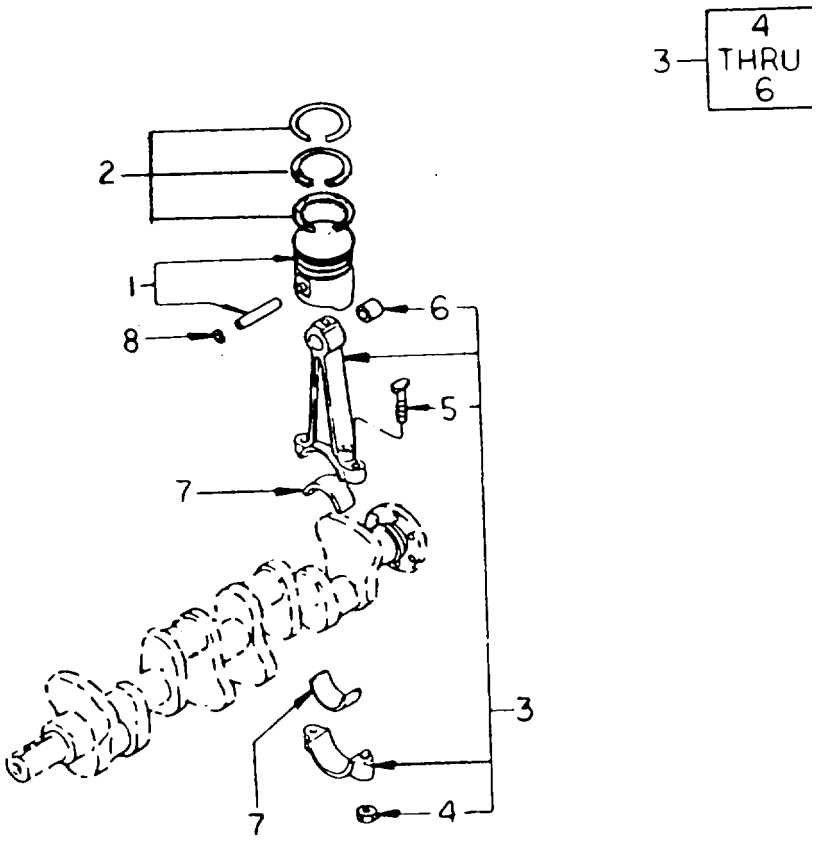

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FIGURE 6. PISTONS & CONNECTING RODS

	(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0104 PISTONS, CONNECTING RODS	
					FIG.6 PISTONS & CONNECTING RODS	
	1	PAHHH	61888	N-12010-R9001	PISTON, COMPRESSOR	4
*	1	PFHZZ	61888	N-12010-R9004	PISTON, INTERNAL COM V	
	2	PFHZZ	61888	N-12033-R9000	RING SET, PISTON	1
	2	PFHZZ	61888	N-12036-R9000	RING SET, PISTON V	
	3	PFHHH	61888	N-12100-P5100	ROD ASSEMBLY, PISTON	4
	4	PFHZZ	61888	N-12113-78201	.NUT, PLAIN, HEXAGON	8
	5	PFHZZ	61888	N-12109-E0701	.BOLT, MACHINE	8
	6	PFHZZ	61888	N-12030-32200	.BUSHING, SLEEVE	4
*	7	PAHZZ	61888	20801-07711	BUSHING, SLEEVE	8
*	7	PFHZZ	61888	20801-07731	BUSHING, SLEEVE V	
	7	PFHZZ	61888	N-12118-P5112	BUSHING, HALF, SLEEV V	
*	8	PFHZZ	61888	N-12032-25501	RING, RETAINING	8

END OF FIGURE

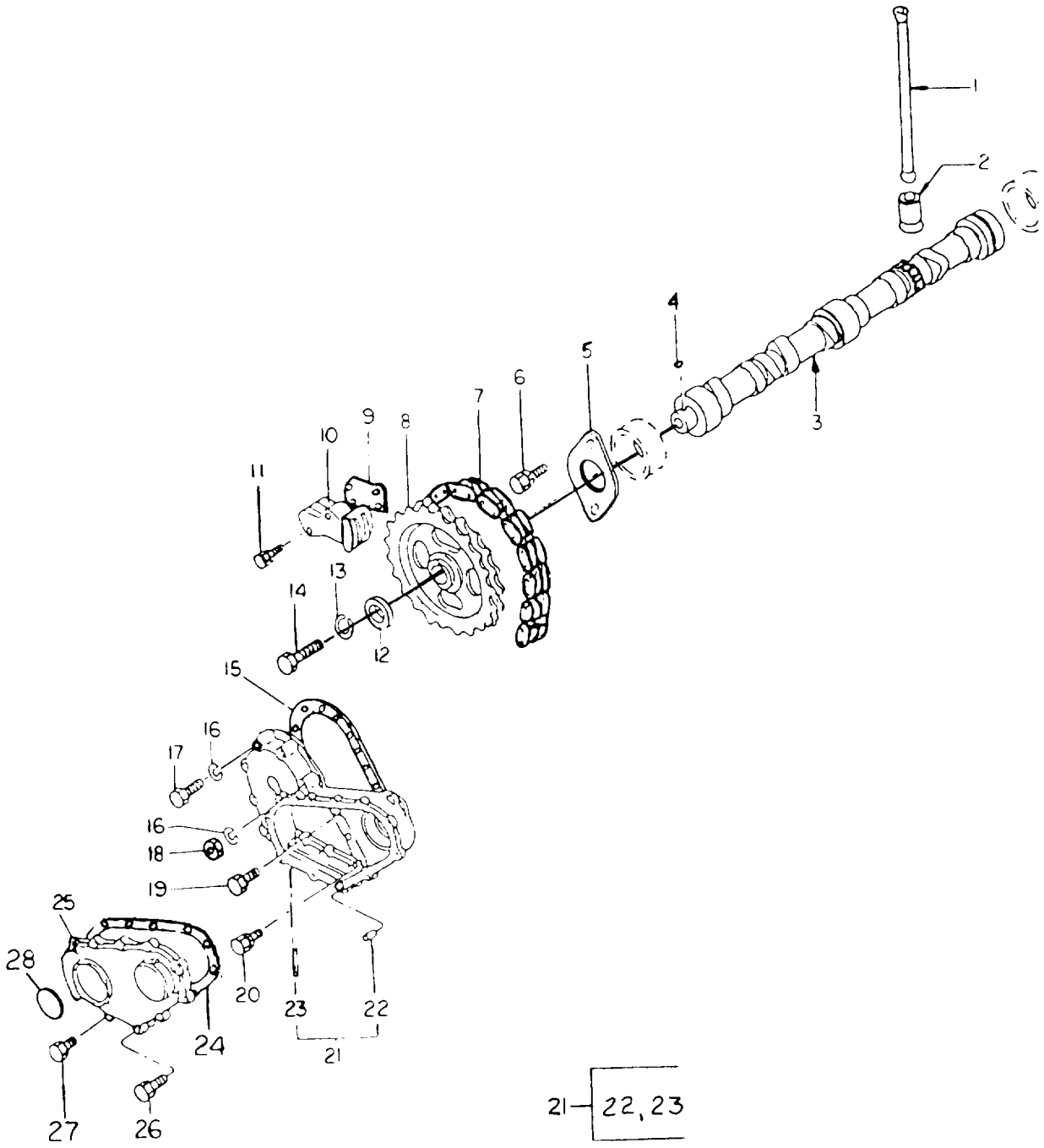

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FIGURE 7. CAMSHAFT & TIMING SYSTEM

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0105 VALVES, CRANKSHAFTS AND	
				TIMING SYSTEM	
				FIG.7 CAMSHAFT & TIMING SYSTEM	
1	PAFZZ	61888	N-13238-12200	PUSH ROD, ENGINE POP,.....	8
2	PAFZZ	61888	N-13231-78201	CAP, VALVE.....	8
3	PFFZZ	61888	N-13001-78201	CAMSHAFT, ENGINE	1
4	PFFZZ	61888	N-00926-41600	KEY, WOODRUFF	1
5	PFFZZ	61888	N-13010-78201	SPACER, PLATE.....	1
6	PFFZZ	61888	N-08120-61662	BOLT ASSEMBLED WASH.....	2
7	PFFZZ	61888	N-13028-73600	CHAIN, ROLLER	1
8	PFFZZ	61888	N-13024-78201	SPROCKET WHEEL	1
9	PFFZZ	61888	N-13079-32200	GASKET PART OF KIT P/N N-10101-LI125	1
10	PFFZZ	61888	N-13070-32200	TENSIONER ASSEMBLY.....	1
11	PFFZZ	61888	N-08120-63562	BOLT, ASSEMBLED WASH.....	2
12	PFFZZ	61888	N-13013-78200	WASHER, FLAT	1
13	PFFZZ	61888	N-08915-14010	WASHER, LOCK	1
14	PFFZZ	61888	N-13012-78200	BOLT, MACHINE.....	1
* 15	KFFZZ	61888	N-13520-L1100	GASKET, HSG.TO BLOCK PART OF KIT P/N N-10101-L1125	1
* 16	PFFZZ	96906	MS35340-45	WASHERILOCK	6
17	PFFZZ	61888	N-08110-85510	BOL T, MACHINE,.....	5
* 18	PFFZZ	61888	Z-9-0911-0508-0	NUT, PLAIN, HEXAGONON.....	1
19	PFFZZ	61888	N-08110-82062	BOLT, ASSEMBLED WAS	2
20	PFFZZ	61888	N-08110-83062	BOLT, ASSEMBLED WASH.....	1
21	PFFZZ	61888	N-13033-L1103	HOUSING, MECHANICAL.....	1
22	PFFZZ	61888	N-11023-32200	.PIN, STRAIGHT, HEAD.....	2
23	PFFZZ	61888	N-08216-61410	.STUD, SHOULDERED	1
24	KFHZZ	61888	N-13521-L1100	PACKING, FRONT COV PART OF KIT P/N N..... -10101-L1125.1.....	1
25	PFFZZ	61888	N-13501-L1103	COVERVACCESS3.....	1
26	PFFZZ	61888	N-08120-63562	BOLT, ASSEMBLED WASH.....	7
27	PFFZZ	61888	N-08120-62562	BOLT ASSEMBLED WASH.....	4
28	KFHZZ	61888	N-13042-L1401	SEAL, OIL, FRONT COV. PART OF KIT P/N N-10101-L125	1

END OF FIGURE

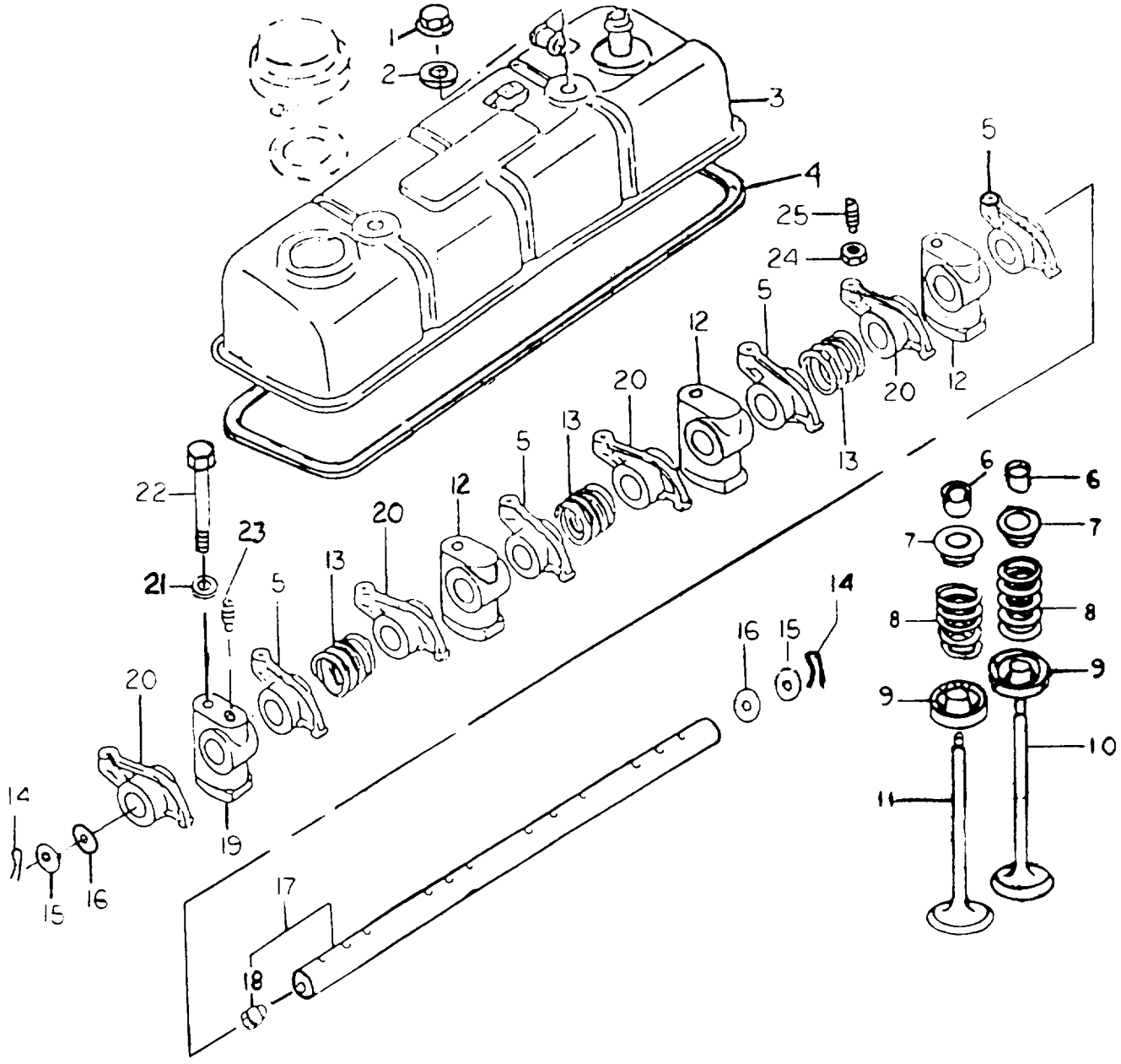

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FIGURE 8. ROCKER & VALVE ASSEMBLY

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0105 VALVES, CRANKSHAFTS AND TIMING SYSTEM	
					FIG.8. ROCKER & VALVE ASSEMBLY.	
	1	PFOZZ	61888	N-13274-B1101	NUT, PLAIN, CAP	2
	2	PFOZZ	61888	N-13275-E0702	WASHER, FLAT	2
	3	PFOZZ	61888	N-13264-LI100	COVER, ACCESS	1
	4	PFFZZ	61888	N-13270-E3400	GASKET PART OF KIT P/N N-10101-L1125	1
	5	PAFZZ	61888	N-13259-78201	ROCKER ARM, ENGINE	4
*	6	PAFZZ	61888	N-13210-B8501	CAP, LINEAR ACTUATIN	16
	7	PFFZZ	61888	N-13209-08000	SEAT, HELICAL COMPRE	8
*	8	PFFZZ	61888	N-13203-T7200	SPRING, HELICAL, COMP	8
	9	KFHZZ	61888	N-13207-66712	SEAL, VALVE1OIL PART OF KIT P/N N-10101-L125	8
*	10	PAFHH	61888	N-13201-P0500	VALVE, POPPET, ENGINE	4
	11	PAFHH	61888	N-13202-P5100	VALVE, POPPET, ENGINE	4
	12	PFFZZ	61888	N-13222-78200	BRACKET, ROCKER SHAF	
	13	PFFZZ	61888	N-13256-58000	SPRING, HELICAL1COMP	
	14	PFFZZ	61888	N-00921-22510	PIN, STRAIGHT, HEADLE	
	15	PFFZZ	61888	N-13289-58000	WASHER, FLAT	
	16	PFFZZ	61888	N-13255-58000	WASHER, SPRING TEN.1.11	2
*	17	XDFHH	61888	N-13252-32200	SHAFT, STRAIGHT	
	18	PFFZZ	61888	N-13254-58000	.PLUG, PIPE	2
*	19	XDFZZ	61888	N-13223-78200	BRACKET, EYE1NONROTA	1
*	20	PAFZZ	61888	N-13258-78201	ROCKER, ARM, ENGINE	
	21	PFFZZ	61888	N-08915-44010	WASHER4FLAT	4
	22	PFFZZ	61888	N-13224-78200	BOLT, SHOULDER	4
	23	PFFZZ	61888	N-13226-78200	SETSCREW	1
	24	PAFZZ	61888	N-13235-78200	NUT, PLAIN, HEX	8
	25	PAFZZ	61888	N-13234-78200	SCREW, ADJUSTING, V	8

END OF FIGURE

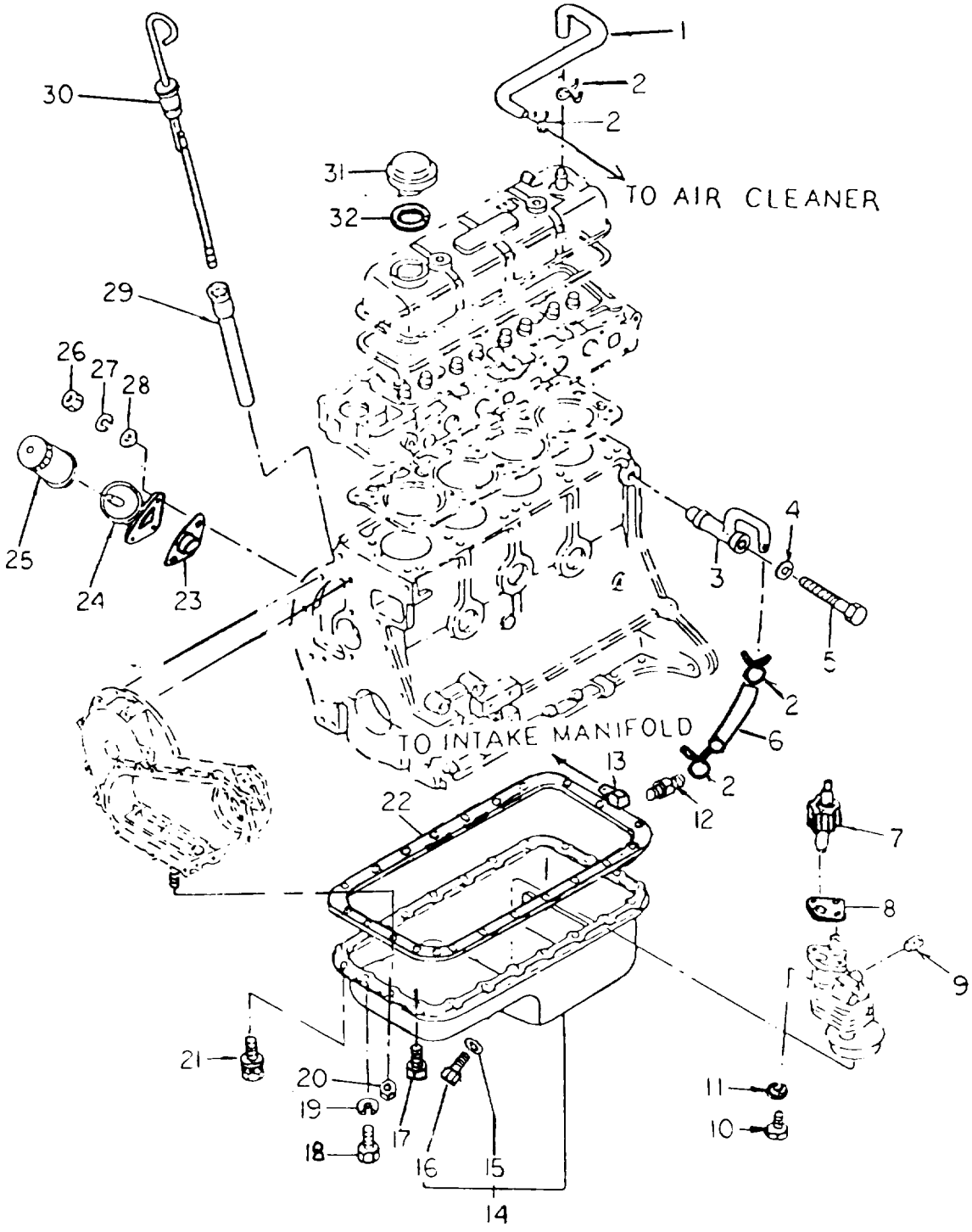

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FIGURE 9. ENGINE LUBRICATION SYSTEM

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0106 ENGINE LUBRICATION SYSTEM FIG.9 ENGINE LUBRICATION SYSTEM	
	1	PFFZZ	61888	N-11826-L1100	HOSE, PREFORMED	1
	2	PFFZZ	61888	N-16572-10801	CLAMP, HOSE	4
	3	PFFZZ	61888	N-15262-L1100	CONNECTOR, CRANKCASE	1
	4	PFFZZ	61888	N-11035-30000	WASHER, LOCK	1
	5	PFFZZ	61888	N-08190-80410	BOLT, MACHINE	1
	6	PFFZZ	61888	N-11828-L1100	HOSE1NONMETALLIC	1
	7	PFHZZ	61888	N-15040-61000	GEARSHAFT, BEVEL-SP	1
	8	PFHZZ	61888	N-15066-78200	GASKET PART OF KIT P/N N-10101-L1125	1
	9	PFHZZ	61888	N-11065-30000	PLUG, PIPE	1
	10	PFHZZ	61888	N-08120-82200	BOLT, MACHINE	2
*	11	PAHZZ	96906	MS35340-45	WASHER, LOCK	2
*	12	PAFZZ	61888	N-11810-A3501	VALVE, VENT	1
	13	PFFZZ	61888	N-14008-L1400	ADAPTER, STRIGHT	1
	14	PFFZZ	61888	N-11110-35202	PARTS KIT, OIL PAN	1
	15	PFFZZ	61888	N-11026-61000	.WASHER, FLAT	1
	16	PFFZZ	61888	N-11128-69200	.PLUG, MACHINE	1
	17	PFFZZ	61888	N-08110-62562	BOLT, MACHINE	3
	18	PFFZZ	61888	N-08110-61262	BOLT, MACHINE	3
	19	PFFZZ	61888	N-08915-13610	WASHERTLOCK	6
	20	PFFZZ	61888	N-08911-20610	NUT, PLAIN, HEX	1
	21	PFFZZ	61888	N-08110-61462	BOLT, ASSEMBLED WAS	17
	22	KFFZZ	61888	N-11121-E0700	GASKET, OIL PAN PART OF KIT P/N N-10101-L1125	1
	23	PFFZZ	61888	N-15239-E0700	GASKET PART OF KIT P/N N-10101-L1125	1
	24	PFFZZ	61888	N-15238-78200	BRACKET, OIL FILTER	1
*	25	PAOZZ	70040	PF34	FILTER ELEMENT, FLUI	1
	26	PFFZZ	61888	N-08911-24010	NUT, PLAINGHEX	2
	27	PFFZZ	61888	N-08915-14010	WASHER, LOCK	2
*	28	XDFZZ	61888	N-08915-44010	WASHER, FLAT	2
*	29	PFOZZ	61888	N-15146-12201	TUBE, METALLIC	1
	30	PFOZZ	61888	N-15140-74002	GAGE ROD, LIQUID LE	1
*	31	PFOZZ	61888	N-15255-85030	CAP, FILLER OPENING	1
	32	KFFZZ	61888	N-15270-83400	.PACKING, OIL FILLER PART OF KIT P/N N-10101-L125	1

END OF FIGURE

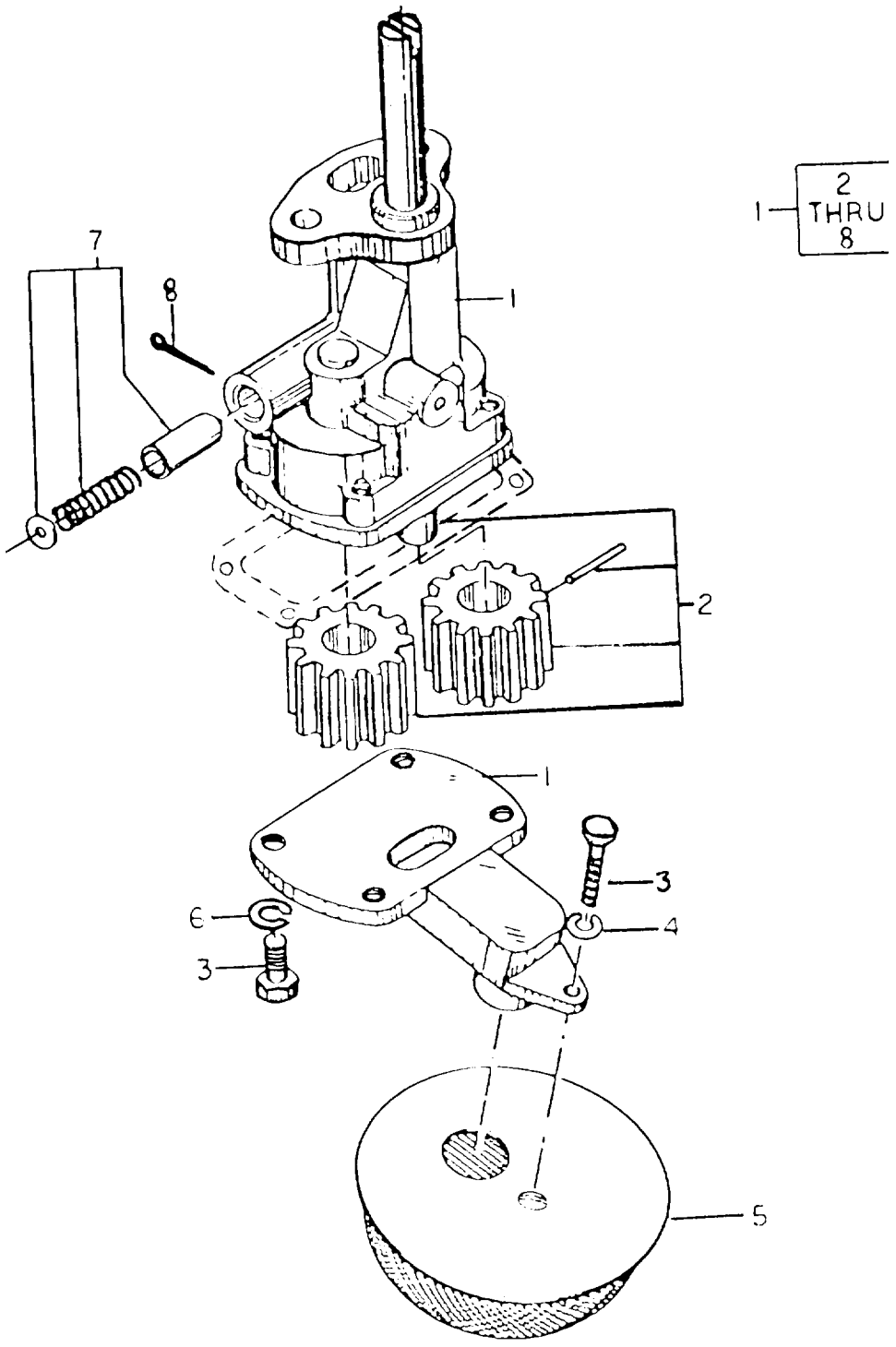

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FIGURE 10. OIL PUMP ASSEMBLY

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0106 ENGINE LUBRICATION SYSTEM	
					FIG10. OIL PUMP ASSEMBLY	
*	1	PFHZZ	61888	N-15010-76000	OIL PUMP ASSEMBLY, E	1
*	2	XDHZZ	61888	N-15020-78205	GEAR SET, SPUR, MAT, ...	1
	3	PFHZZ	61888	N-08120-61410	.BOLT, MACHINE	5
	4	PFFZZ	61888	N-08915-13600	.WASHER, LOCK.....	1
	5	PFFZZ	61888	N-15050-78200	.STRAINER, SEDIMENT	1
	6	PFHZZ	61888	N-08916-13600	.WASHER, LOCK.....	4
	7	PFHZZ	61888	N-15132-58001	.VALVE, REGULATING	1
	8	PFHZZ	61888	N-08921-32510	PIN, COTTER	1

END OF FIGURE

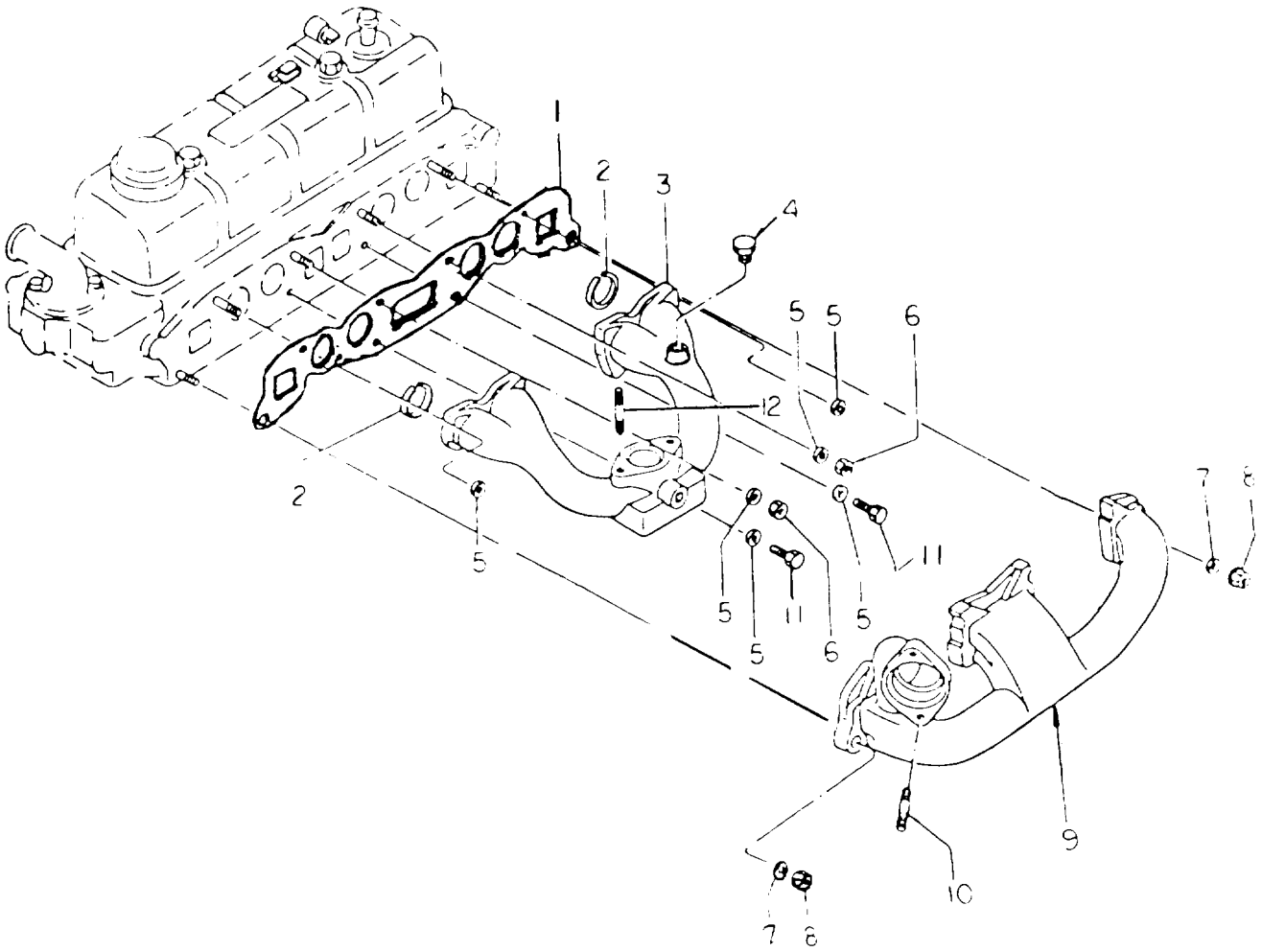

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FIGURE 11. INTAKE & EXHAUST MANIFOLD

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0108 MANIFOLDS	
					FIG11. INTAKE & EXHAUST MANIFOLD	
	1	KFFZZ	61388	N-14035-B8500	GASKET, MANIFOLD PART OF KIT P/N N-10101-L1125.	1
	2	PFOZZ	61888	N-14034-14600	SPACER, SLEEVE	2
	3	PFOZZ	61888	N-14003-LllOO	MANIFOLD, INTAKE	1
*	4	XDFZZ	61888	N-08931-30210	PLUG, MACHINE THRE	1
	5	PFOZZ	61888	N-14037-N3600	WASHER, SADDLE	6
	6	PAOZZ	61888	N-08911-20810	NUT , PLAIN, HEXAGON	4
	7	PFOZZ	61888	N-08915-53810	WASHER, FLAT	2
	8	PFOZZ	61888	N-08918-10810	NUT, PLAIN, HEXAGON	2
	9	PFOZZ	61888	N-14004-L1lOl	MANIFOLD, EXHAUST	1
	10	PFOZZ	61888	N-08223-83010	STUD, PLAIN	2
	11	PFOZZ	61888	N-08120-83510	BOLT, MACHINE	2
*	12	XDFZZ	61888	N-08213-86010	STUD, PLA!N,	2

END OF FIGURE

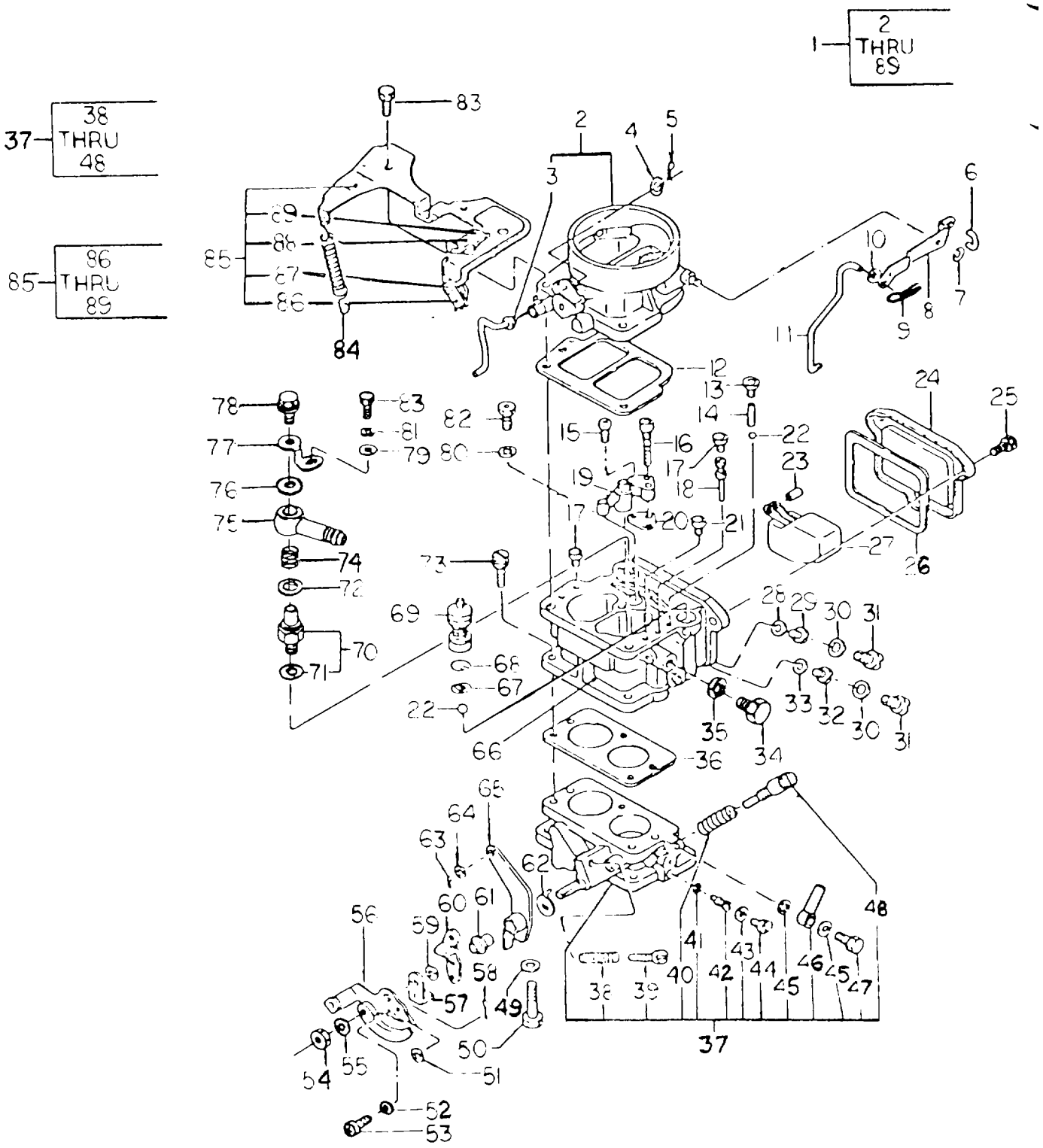

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FIGURE 12. FUEL SYSTEM, CARBURETOR ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 03 FUEL SYSTEM GROUP 0301 CARBURETOR	
				FIG.12. FUEL SYSTEM, CARBURETOR ASSEMBLY	
1	PFOFF	61888	N-16010-L6803	CARBURETOR, FLOAT	1
2	XAFZZ	61888	N-16011-L11OO0	.AIR HORN COMP., .,	1
3	XDFZZ	61888	N-16248-LIlOO	..CONNECTING LINK.RIG	1
4	KFFZZ	61888	99999-01059	.WASHER, LVR.CONN.TOP PART OF KIT P/N N-16465-80100OO	1
5	KFFZZ	61888	99999-01060	.COT.LEVER CONN.TOP PART OF KIT P/N N-16475-BO100	1
6	XDFZZ	61888	N-16143-32200	.CONNECTING LINK, RIG	1
7	KFFZZ	61888	99999-01067	.CLIP, PUMP ARM PART OF KIT P/N N-16475-80100	1
8	XAFZZ	61888	N-16195-69200	.ARM ASSY, PUMP	1
9	KFFZZ	61888	99999-01064	.COT.ROD CONN.TOP PART OF KIT P/N N-16475-801003.09	1
10	KFFZZ	61888	99999-01063	.WSHR.ROD CONN.TOP PART OF KIT P/N N-16475-80100	1
11	XAFZZ	61888	N-16081-84700	.ROD, PUMP CONNECTING	1
12	KFFZZ	61888	99999-01070	.GASKET, BODY-AIRHORN PART OF KIT P/N N-16465-B0100 PART OF KIT P/N N-16455-A3501	1
13	PFFZZ	61888	N-16286-74505	.PLUG, PIPE	1
14	XAFZZ	61888	N-16285-84700	.WEIGHT, PUMP	1
15	KFFZZ	61888	99999-01054	.SCREW, VENTURI PART OF KIT P/N N-16465-80100.	2
16	XAFZZ	61888	N-16310-48216	.JET ASSY , 1ST.MN.AI, BB	1
17	PFFZZ	61888	N-16286-A8600	.VALVE, PLUG,	2
18	KFFZZ	61888	N-16054-A8601	.JET, SLOW PART OF KIT P/N 20801-09911	1
19	XAFZZ	61888	99999-01086	.VENTURI,	1
20	KFFZZ	61888	99999-01073	.GASKET, VENTURI PART OF KIT P/N N-16455-A3501	1
21	KFFZZ	61888	N-16224-08100	.JET, SLOW A, B PART OF KIT P/N 20801-09911	1
22	KFFZZ	61888	99999-01057	.BALL, STEEL 1/8 PART OF KIT P/N N-16465-80100	1
23	PFFZZ	61888	N-16062-K7201	.COLLAR, PIN-RIVET, TH	1
24	PFFZZ	61888	N-16063-11201	.COVER, ACCESS	1
25	KFFZZ	61888	99999-01049	.SCREW, FLOAT CHAMBER PART OF KIT P/N N-16465-B0100,	3
26	KFFZZ	61888	99999-01071	.GASKET, FLT.CHMBR. PART OF KIT P/N N-16455-A3501	1
27	XAFZZ	61888	N-16061-84700	.FLOAT ASSEMBLY,	1
28	KFFZZ	61888	99999-01074 N-16455-A3501	.GASKET, JET 2ND MAIN PART OF KIT P/N	1 .
29	KFFZZ	61888	N-16054-L0715	.JET, 2ND.MAIN PART OF KIT P/N 20801-09911	1

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
30	KFFZZ	61888	99999-01075	.GASKET, PLUG MN.JET PART OF KIT P/N N-16455-A3501	2
31	PFFZZ	61888	N-16272-B8201	.PLUG, MACHINE THREAD	2
32	KFFZZ	61888	N-16033-K7201	.JET, 1ST.MAIN PART OF KIT P/N 20801-09911	1
33	KFFZZ	61888	99999-01076 N-16455-A3501	.GASKET, JET 1ST.MAIN PART OF KIT P/N	1
34	XDFZZ	61888	N-16031-48216	.PLUG, MACHINE THREAD	1
35	KFFZZ	61888	99999-01077	.GASKET, PLUG SLOW PART OF KIT P/N N-16455-A3501	1
36	KFFZZ	61888	99999-01078	.GASKET, FLANGE COMP. PART OF KIT P/N N-16455-A3501.	1
37	PFFZZ	61888	N-16293-L1100	..PARTS KIT, CARBURET	1
38	XAFZZ	61888	N-16193-21600	..SPRING, THROT.SCREW	1
39	XAFZZ	61888	N-16114-74505	..SCREW, THROTTLE ADJ	1
40	XAFZZ	61888	N-16145-31301	..SPRING, IDL.ADJ.SCR	1
41	KFFZZ	61888	99999-01079	..GASKET, NOZZLE IDLE PART OF KIT P/N N-16455-A3501	1
42	XAFZZ	61888	N-16486-U0600	..NOZZLE, IDLE	1
43	KFFZZ	61888	99999-01080	..GASKET, PLUG NOZ.IDL PART OF KIT P/N N-16455-A3501	1
44	XAFZZ	61888	N-16031-U0600	..PLUG, IDLE NOZZLE,	1
45	KFFZZ	61888	N-16337-L0715	..GASKET, VACUUM CONN. PART OF KIT P/N N-16455-A3501	2
46	XDFZZ	61888	N-16111-L10	..CONNECTOR, MULTIPLEI. P	1
47	XAFZZ	61888	N-16338-85900	..BOLT, VACUUM CONN	1
48	XAFZZ	61888	N-16144-A8600	.SCREW, IDLE ADJUST	1
49	KFFZZ	61888	99999-01055 N-16465-80100	.LOCK WASHR, FLG SCREW PART OF KIT P/N	1
50	PFFZZ	61888	N-16172-37000	SCREW, SHOULOER	1
51	KFFZZ	61888	99999-01065	.WSHR.ROO CONN.BOT. PART OF KIT P/N N-16475-BO100	1
52	KFFZZ	61888	99999-01056	.LOCK WSHR, LVR.ASSY PART OF KIT P/N N-16465-80100	1
53	KFFZZ	61888	99999-01053	.SCREW, LEVER ASSY. PART OF KIT P/N N -16465-B0100	1
54	PFFZZ	61888	N-16124-31300	.NUT, PLAIN, HEXAGON	1
55	KFFZZ	61888	99999-01050 N-16465-80100	.LOCK WSHR.THROT.SHT PART OF KIT P/N	1
56	XAFZZ	61888	N-16192-L1100	.LEVER ASSY.,THROT	1
57	XAFZZ	61888	N-16277-L1100	.ARM, 1ST.THROTTLE	1
58	KFFZZ	61888	99999-01066	.COT.ROD CONN.BOT. PART OF KIT P/N N-16475-80100	1
59	PFFZZ	61888	N-16072-L1100	.WASHERIFLATR	1
60	XAFZZ	61888	N-16128-L1100	.ARM, THROTTLE OPENER	1
61	XAFZZ	61888	N-16123-L1100	.CLR.1ST.THROT.SFT	1
62	XAFZZ	61888	N-16133-A6111	.ARM, 1ST.THROT.SHAFT	1
63	KFFZZ	61888	99999-01062 N-16475-B0100	.COT.LEVER CONN.BOT PART OF KIT P/N	1
64	KFFZZ	61888	99999-01061 N-16475-80100	.WASHER, LVR.CONN.BOT PART OF KIT P/N	1
65	XAFZZ	61888	N-16397-L1100	.LEVER ASSY.STARTING	1

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
66	XAFZZ	61888	99999-01085	.MAIN BODY, CARB	1
67	KFFZZ	61888	N-16245-35000	.STRAINER, PUMP PART OF KIT P/N 20801 -099111	1
68	KFFZZ	61888	N-16394-0202P	.CLIP, PUMP STRAINER PART OF KIT P/N 20801-09911	1
69	KFFZZ	61888	N-16138-J0110	.PLUNGER, PUMP COMP. PART OF KIT P/N 20801-09911	1
70	KFFZZ	61888	N-16092-74500	.SEAT COMP.FLOAT V. PART OF KIT P/N 20801-09911	1
71	KFFZZ	61888	N-16060-31300	..GASKET, FLOAT V.SEAT PART OF KIT P/N 20801-09911	3
72	KFFZZ	61888	N-16094-21600	.GASKET, FUEL UNION PART OF KIT P/N N -16455-A3501	1
73	KFFZZ	61888	99999-01052	.SCREW, FLG.COMP.- MB PART OF KIT P/N N-16465-BO100	2
74	KFFZZ	61888	N-16098-NOO00	.STRAINER, ASSY. PART OF KIT P/N 20801-09911	1
75	PFFZZ	61888	N-16111-L1100	.CONNECTOR, MULTIPLE?.1	1
76	KFFZZ	61888	N-16049-21605	.GASKET, UNION BOLT PART OF KIT P/N N -16455-A3501	1
77	PFFZZ	61888	N-16138-A8900	.CONNECTING LINK, RIG	1
78	PFFZZ	61888	N-16108-A3501	.BOLT, MACHINE	1
79	KFFZZ	61888	99999-01068	.WASHER, AIR HORN SCR PART OF KIT P/N N-16475-B0100	1
80	KFFZZ	61888	99999-01072	.GASKET, JET ASSY.PWR PART OF KIT P/N N- 16455-A3501. s	1
81	KFFZZ	61888	99999-01069	.LOCK WSHR.HORN SCR. PART OF KIT P/N N-16475-BO100	1
82	PFFZZ	61888	N-16101-K7201	.BOLT, FLUID PASSAGE.1	1
83	KFFZZ	61888	99999-01051	.SET SCREW AIR HORN PART OF KIT P/N N-16465-BO10O	4
84	PFFZZ	61888	N-16160-L1100	.SPRING, HELICAL, EX	1
85	PFFZZ	61888	N-16165-J2400	.PARTS KIT, CARBURETO	1
86	XAFZZ	61888	99999-01082	..SCREW, CH.WIRE HLDR	1
87	XAFZZ	61888	99999-01081	..HOLDER, CHOKE WIRE	1
88	XAFZZ	61888	99999-01084	..SCREW, THROT.WIRE	1
89	XAFZZ	61888	99999-01083	..HOLDER, THROT.WIRE	1

END OF FIGURE

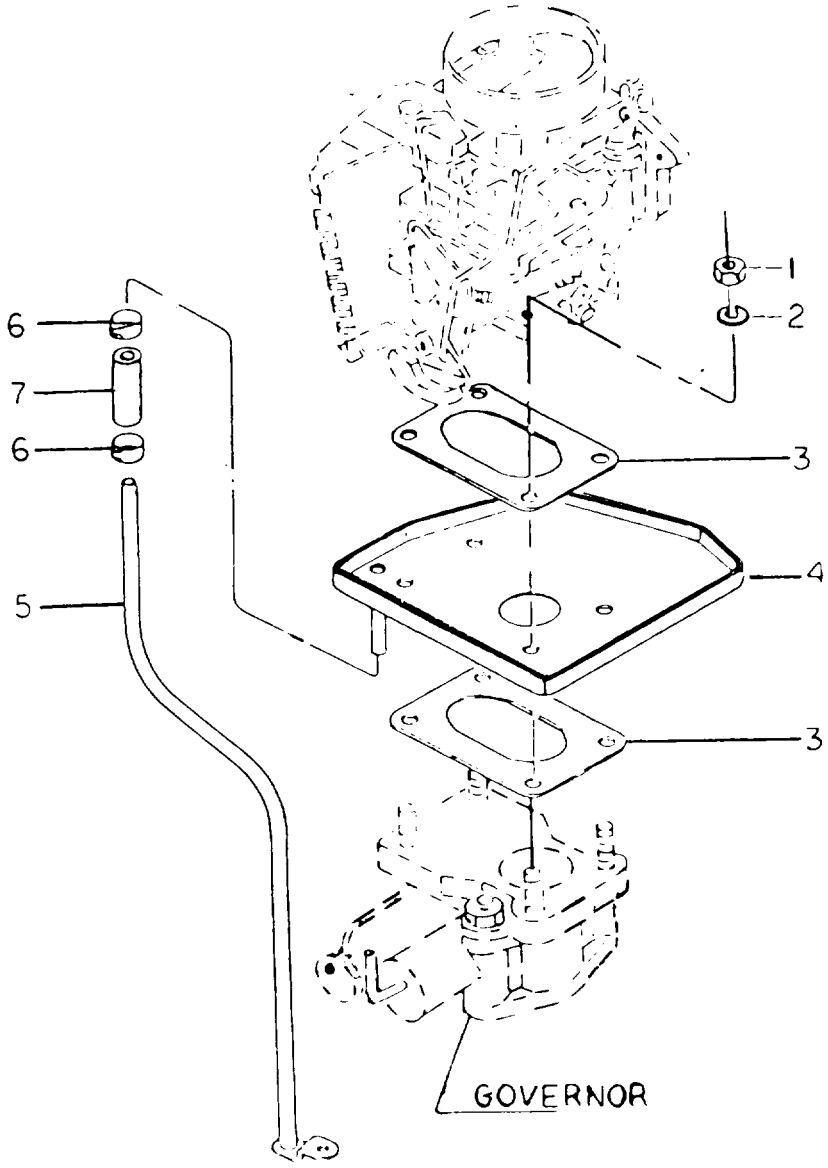

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FIGURE 13. CARBURETOR, MOUNTING

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0301 CARBURETOR FIG13. CARBURETOR, MOUNTING	
	1	PFFZZ	61888	N-08911-30810	NUT, PLAIN, HEXAGON	4
*	2	PAFZZ	96906	MS35340-45	WASHER, LOCK.....	4
	3	PFFZZ	61888	N-16174-L6200	GASKET.....	2
	4	PFFZZ	61888	N-14330-L1100	SPACER, PLATE	1
	5	PFFZZ	61888	N-14331-L1100	TUBE ASSEMBLY, METAL	1
	6	PFFZZ	61888	N-08723-11400	CLAMP, HOSE.....	2
	7	PFFZZ	61888	N-14334-47705	HOSE, NONMETALLIC	1

END OF FIGURE

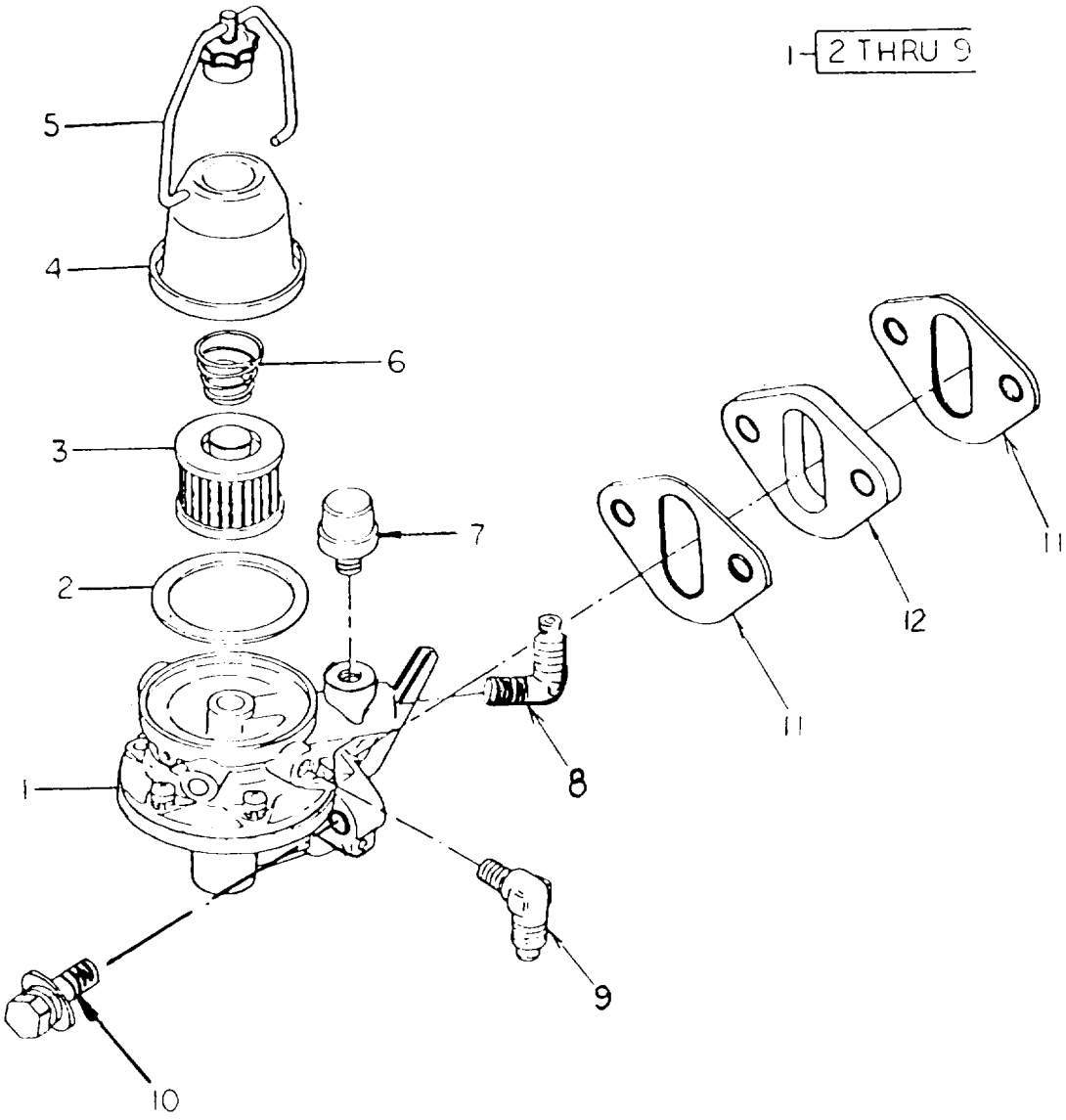

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FIGURE 14. FUEL PUMP ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0302 FUEL PUMPS	
				FIG.14. FUEL PUMP ASSEMBLY	
1	PFOZZ	61888	N-17010-L1101	PUMP, FUEL, METERIN.....	1
2	PFOZZ	61888	N-16407-32200	.GASKET.....	1
3	PFOZZ	61888	20801-02061	.FILTER.FLUID	1
4	PFOZZ	61888	N-16402-K4046	.B0WL FUEL FILTER.....	1
5	PFOZZ	61888	N-16440-35210	.CLIP, RETAINING.....	1
6	XAOZZ	61888	N-16405-10400	.SPRING, HELICAL, COMP.....	1
7	PFOZZ	61888	N-17078-32200	.DOME ASSEMBLY, AIR	1
8	PFOZZ	61888	N-17103-C0600	.ELBOW, PIPE TO BOSS	1
9	PFOZZ	61888	N-17103-K5001	.ELBOW, PIPE TO BOSS.....	1
10	PFOZZ	61888	N-08120-83525	BOLT, ASSEMBLED WAS.....	2
11	PFFZZ	61888	N-17099-21002	GASKET PART OF KIT P/N N-10101-L1125	2
12	PFOZZ	61888	N-I6420-A0600	SPACER, PLATE	1
				END OF FIGURF	

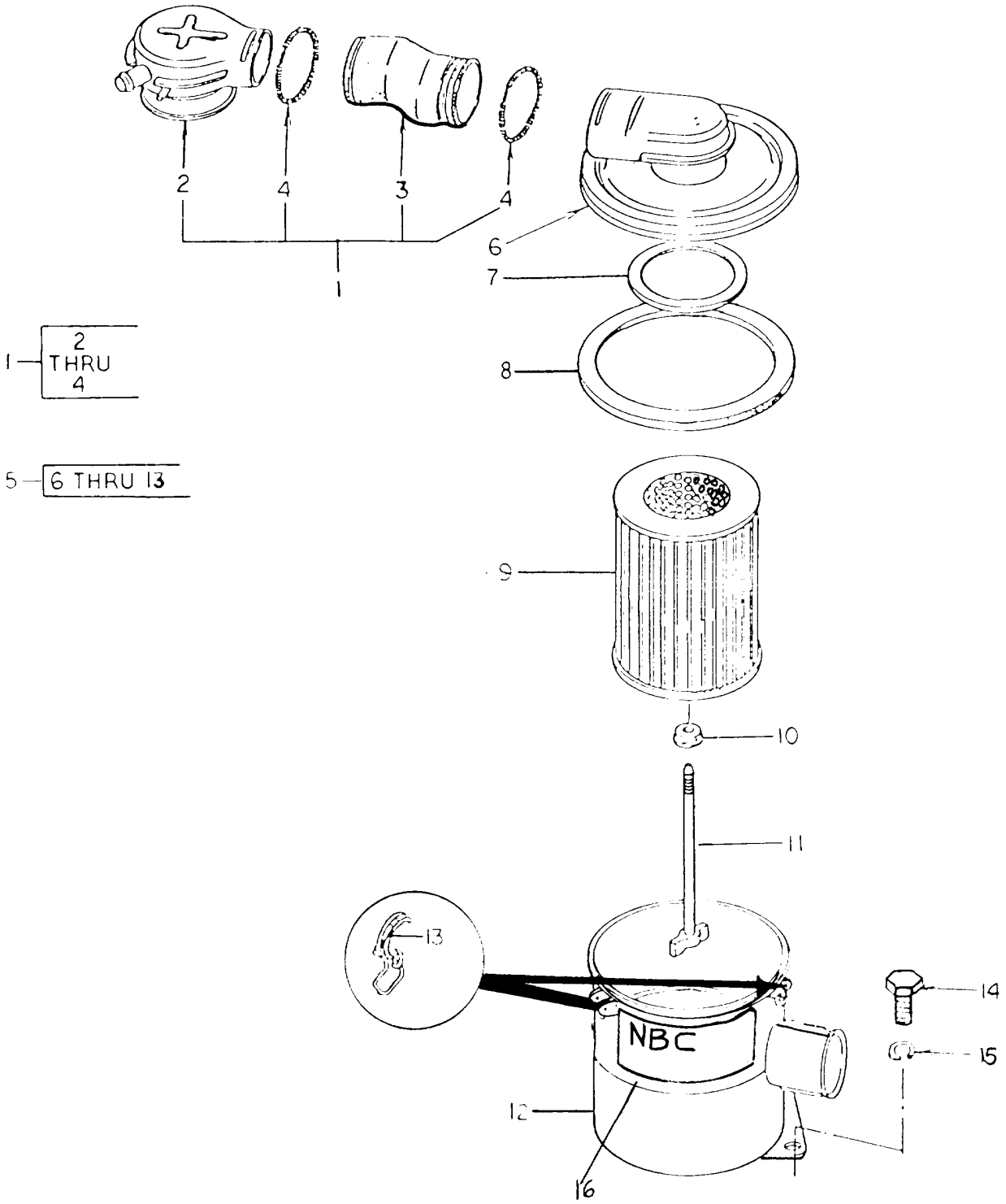

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FIGURE 15. AIR CLEANER ASSEMBLY

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0304 AIR CLEANER	
					FIG.15. AIR CLEANER ASSEMBLY	
	1	AOOZZ	61888	N-16530-K7216	DUCT ASSEMBLY	1
*	2	PFOZZ	61888	N-16531-L1101	.OUTLET, PIPE	1
	3	PAOZZ	61888	53031-12111	.HOSE, AIR DUCT	1
	4	PAOZZ	61888	N-16560-L1100	.CLAMP, HOSE	2
	5	PFOZZ	61888	23031-00201	AIR CLEANER, INTAKE	1
	6	XAOZZ	61888	N-16526-L1100	.COVER	1
	7	PFOZZ	61888	N-16713-0101P	.PACKING, PREFORMED.,	1
	8	PFOZZ	61888	N-16548-L1100	.PACKING1PREFORMED	1
	9	PAOZZ	61888	N-16546-L3000	.FILTER ELEMENT, INTA	1
	10	PFOZZ	61888	N-16518-99003	.PACKING, PREFORMED	1
	11	PFOZZ	61888	N-16516-L1100	.BOLT, TEE HEAD	1
	12	XAOZZ	61888	N-16528-L1101	.BODY.,	1
*	13	XDOZZ	61888	N-16509-99009	.LEVER, LOCK-RELEASE	3
	14	PFOZZ	61888	01100-08012	BOLT, MACHINE	2
*	15	PAOZZ	96906	MS35340-45	WASHER, LOCK	2
	16	PAOZZ	19207	12296626	DECAL	1
					END OF FIGURE	

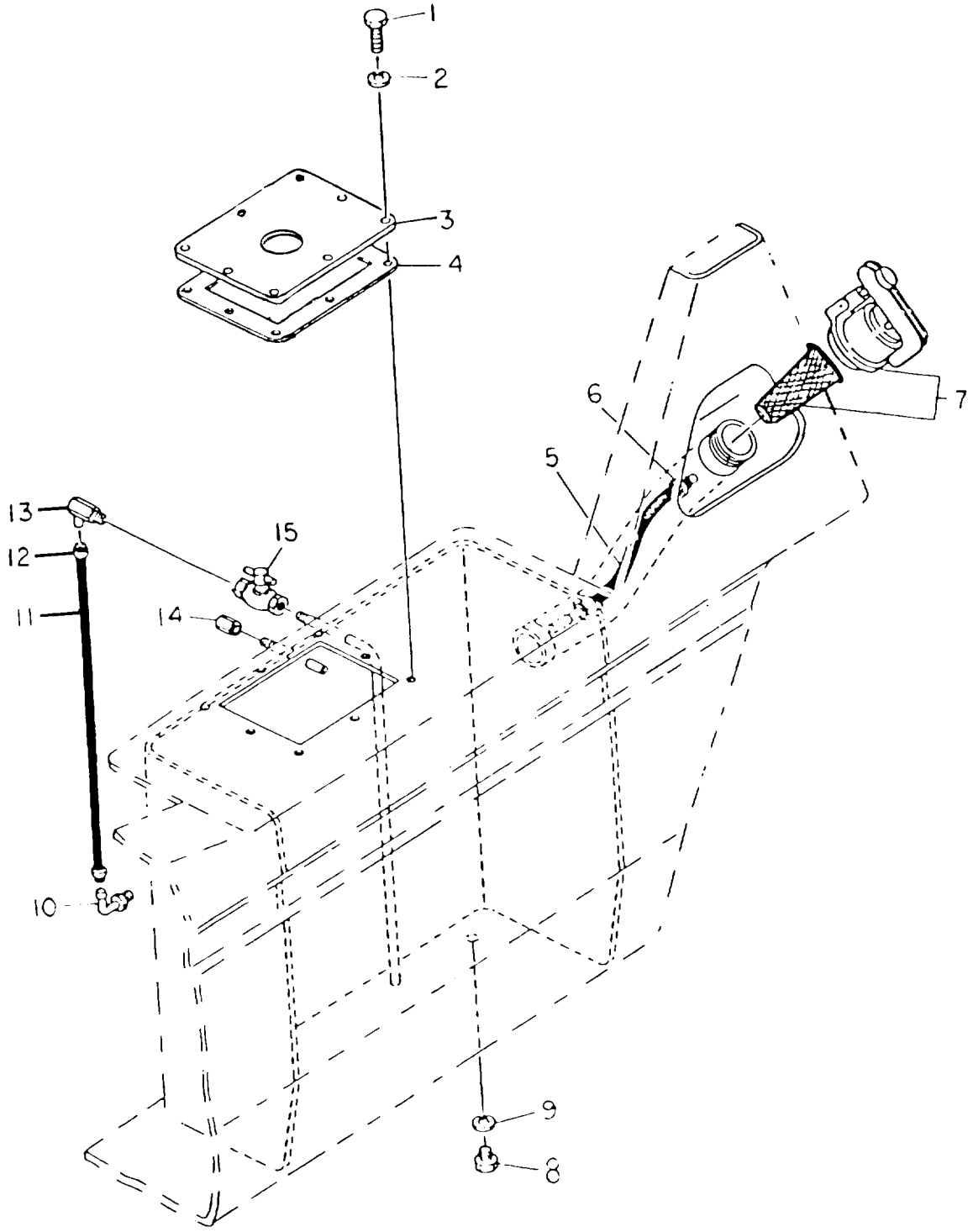

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FIGURE 16. FUEL TANK, LINES, FITTINGS

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0306 TANKS, LINES, FITTINGS	
				FIG.16. FUEL TANK, LINES, FITTINGS	
* 1	PFFZZ	61888	01100-08020	BOLT, MACHINE ., ...	8
* 2	PFFZZ	96906	MS35340-45	WASHER, LOCK	8
3	PFFZZ	61888	23652-22071	PLATE, CLIP RETAIN.....	1
4	PFFZZ	61888	52252-72071	GASKET.....	1
5	PFFZZ	61888	23652-22111	HOSE, NONMETALLIC	1
6	PFFZZ	61888	23652-22121	CLAMP, HOSE.....	2
7	PFFZZ	49234	1272D	CAP, FILLER OPENING	1
8	PFFZZ	61888	22197-52081	PLUG, VENT	1
9	PFFZZ	61888	22197-52091	PACKING, PREFORMED	1
10	PFFZZ	61888	22512-20152	ELBOW, PIPE TO HOSE.....	1
11	PFFZZ	61888	23032-22011	HOSE, NONMETALLIC	1
12	PFFZZ	61888	23652-23051	CLAMP, HOSE.....	2
13	PFFZZ	61888	53652-72101	ELBOW, PIPE TO HOSE.....	1
14	PFFZZ	61888	23452-22041	CAP, PIPE.....	1
15	PFFZZ	61888	23442-20131	COCK, POPPET DRAIN	1

END OF FIGURE

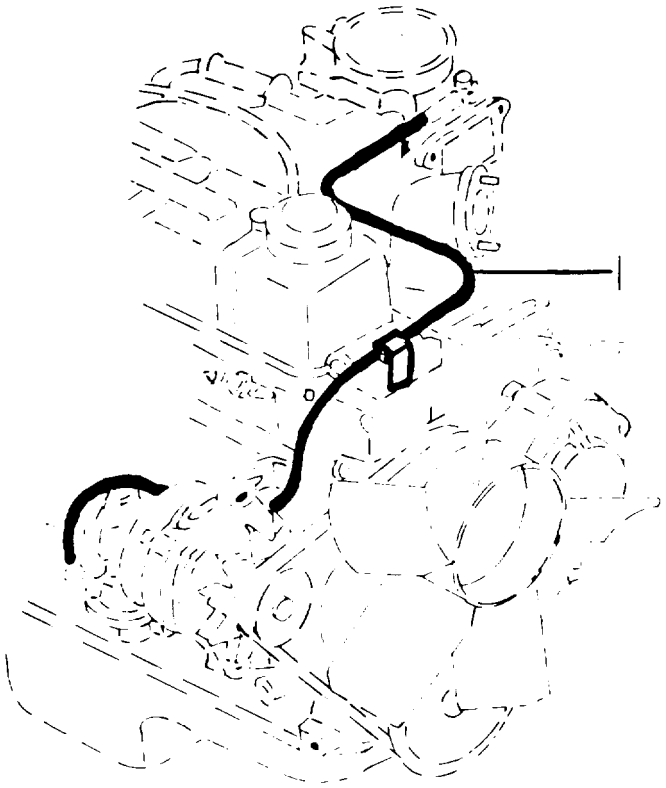

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FIGURE 17. FUEL LINE, ENGINE

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0306 TANKS, LINES, FITTINGS	
				FIG.17. FUEL LINE, ENGINE	
1	PFFZZ	61888	N-17522-L1100	TUBE ASSEMBLY, META	1
				END OF FIGURE	

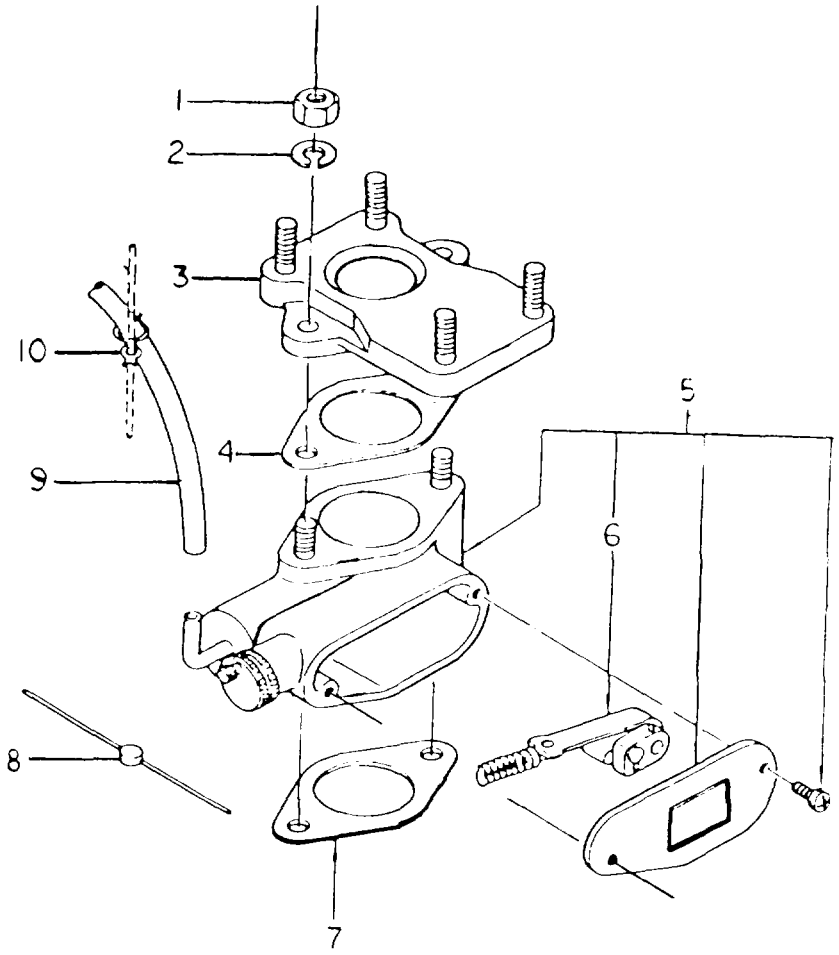

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FIGURE 18. GOVERNOR ASSEMBLY

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0308 ENGINE SPEED GOVERNOR	
					FIG.18. GOVERNOR ASSEMBLY	
*	1	PFFZZ	61888	N-08911-30810	NUT, PLAIN, HEXAGON	2
*	2	XDFZZ	61888	N-08915-13810	WASHER, LOCK.....	2
	3	PFFZZ	61888	N-19170-L1100	SPACER, PLATE	1
	4	PFFZZ	61888	N-19157-L0700	GASKET.....	1
	5	PFOZZ	61888	N-19100-K7255	GOVERNOR, GASOLINE E	1
	6	PAFZZ	61888	N-19110-K7215	.CAM, CONTROL.....	1
	7	PFFZZ	61888	N-19159-K0100	GASKET.....	1
	8	PFFZZ	61888	N-19180-L0100	SEAL ANTIPILFERAGE,.....	1
	9	PFFZZ	61888	N-19320-L1100	HOSE, NONMETALLIC	1
	10	PFFZZ	61888	N-22472-G0302	CLAMP, LOOP.....	1

END OF FIGURE

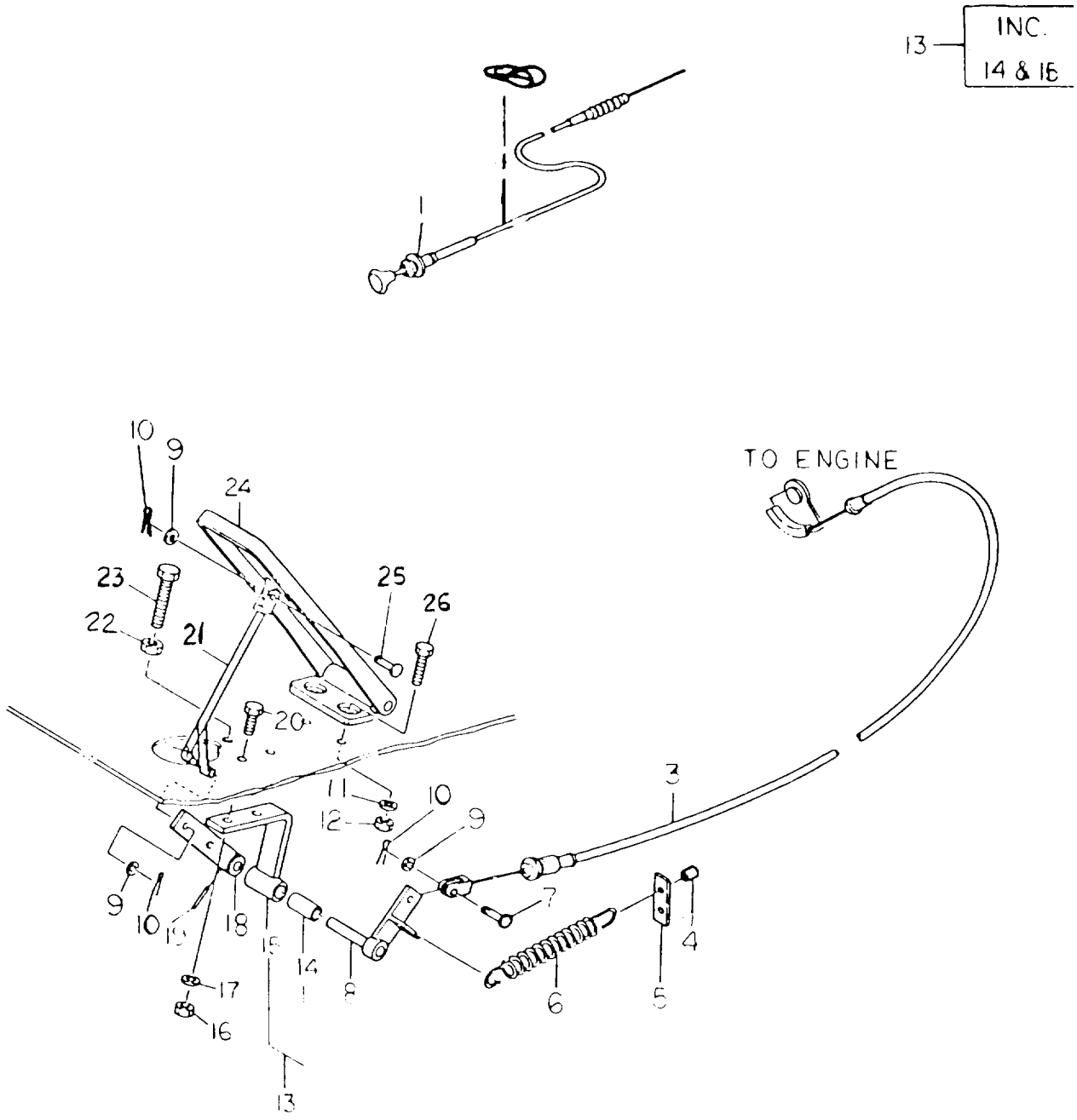

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FIGURE 19. ACCELERATOR PEDAL & CHOKE WIRE

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0312 ACCELERATOR, CHOKE CONTROL	
					FIG. 19. ACCELERATOR PEDAL & CHOKE WIRE	
	1	PFOZZ	77910	3A1501	CONTROL ASSEMBLY, PU	1
	2	PFOZZ	96906	MS3367-4-9	STRAP, TIEDOWN1ELECT	4
	3	PAOZZ	61888	23035-22011	CONTROL ASSEMBLY, P	1
	4	PAOZZ	61888	04720-12006	HOSE, NONMETALLIC	1
*	5	XDOZZ	61888	23652-42371	CONNECTING LINK, RIG	1
	6	PAFZZ	61888	23655-22151	SPRING, HELICAL, EX	1
	7	PFOZZ	61888	02262-06015	PIN, STRAIGHT, HEADED	1
*	8	XDFZZ	61888	23035-22031	CONNECTING LINK1RIG	1
	9	PFFZZ	61888	02000-00006	WASHER, FLAT	3
	10	PFFZZ	61888	02200-16010	PIN, COTTER	3
	11	PFFZZ	61888	02010-00006	WASHER, LOCK	2
	12	PFFZZ	61888	01400-00006	NUT, PLAIN, HEXAGON	2
	13	PFFZZ	61888	23035-20201	CONNECTING LINK, ASS	1
	14	PFFZZ	61888	23655-22101	.BUSHING, SLEEVE	2
	15	XAFZZ	61888	23035-22001	.BRACKET, LINK	1
	16	PFFZZ	61888	01400-00008	NUT, PLAIN, HEXAGON .	2
*	17	PFFZZ	96906	MS35340-45	WASHER, LOCK	2
*	18	XDFZZ	61888	53032-62001	CONNECTING LINK, RIG	1
	19	PAFZZ	96906	MS171558	PIN, SPRING	1
*	20	PFFZZ	61888	01100-08020	BOLT, MACHINE	2
*	21	XDFZZ	61888	24235-22011	CONNECTING LINK, RIG	1
	22	PFOZZ	61888	01400-00010	NUT, PLAIN, HEXAGON	1
	23	PFOZZ	61888	01120-10035	BOLT, MACHINE	1
	24	PAFZZ	61888	23655-22201	PEDAL, CONTROL	1
	25	PFFZZ	61888	02262-06020	PIN, STRAIGHT, HEADED	1
	26	PFFZZ	61888	01030-06016	SCREW, MACHINE	2

END OF FIGURE

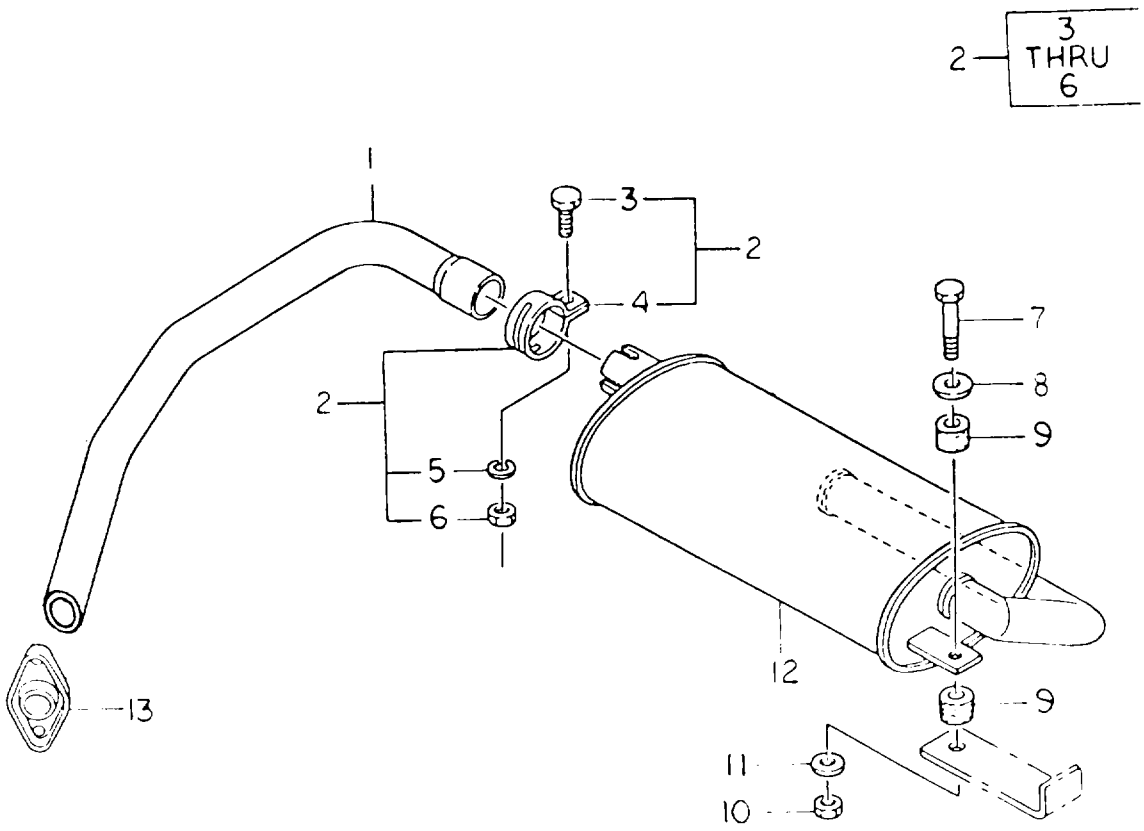

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FIGURE 20. EXHAUST SYSTEM

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 04 EXHAUST SYSTEM	
				GROUP 0401 MUFFLER AND PIPES	
				FIG.20. EXHAUST SYSTEM	
1	PAOZZ	61888	23032-33001	PIPE, EXHAUST	1
2	PFOZZ	61888	23452-30301	CLAMP, LOOP	1
3	PFOZZ	61888	01100-06025	.BOLT, MACHINE	1
4	XAOZZ	61888	23452-32021	.CLAMP	1
5	PFOZZ	72741	435-006	.WASHFR, LOCK	1
6	PFOZZ	61888	01400-00006	.NUT, PLAIN, HEXAGON	1
7	PFOZZ	61888	01100-10055	BOLT, MACHINE	2
8	PFOZZ	15526	125ST-MO10	WASHER.FLAT	2
9	PAOZZ	61888	22252-32241	MOUNT, RESILIENT	4
10	PFOZZ	61888	23651-02011	NUT, SELF-LOCKING HE	2
11	PFOZZ	61888	22252-32251	WASHER, FLAT	2
12	PAOZZ	61888	23652-30201	MUFFLER, EXHAUST	1
13	PFOZZ	61888	23452-32031	FLANGE, PIPE	1
				END OF FIGURE	

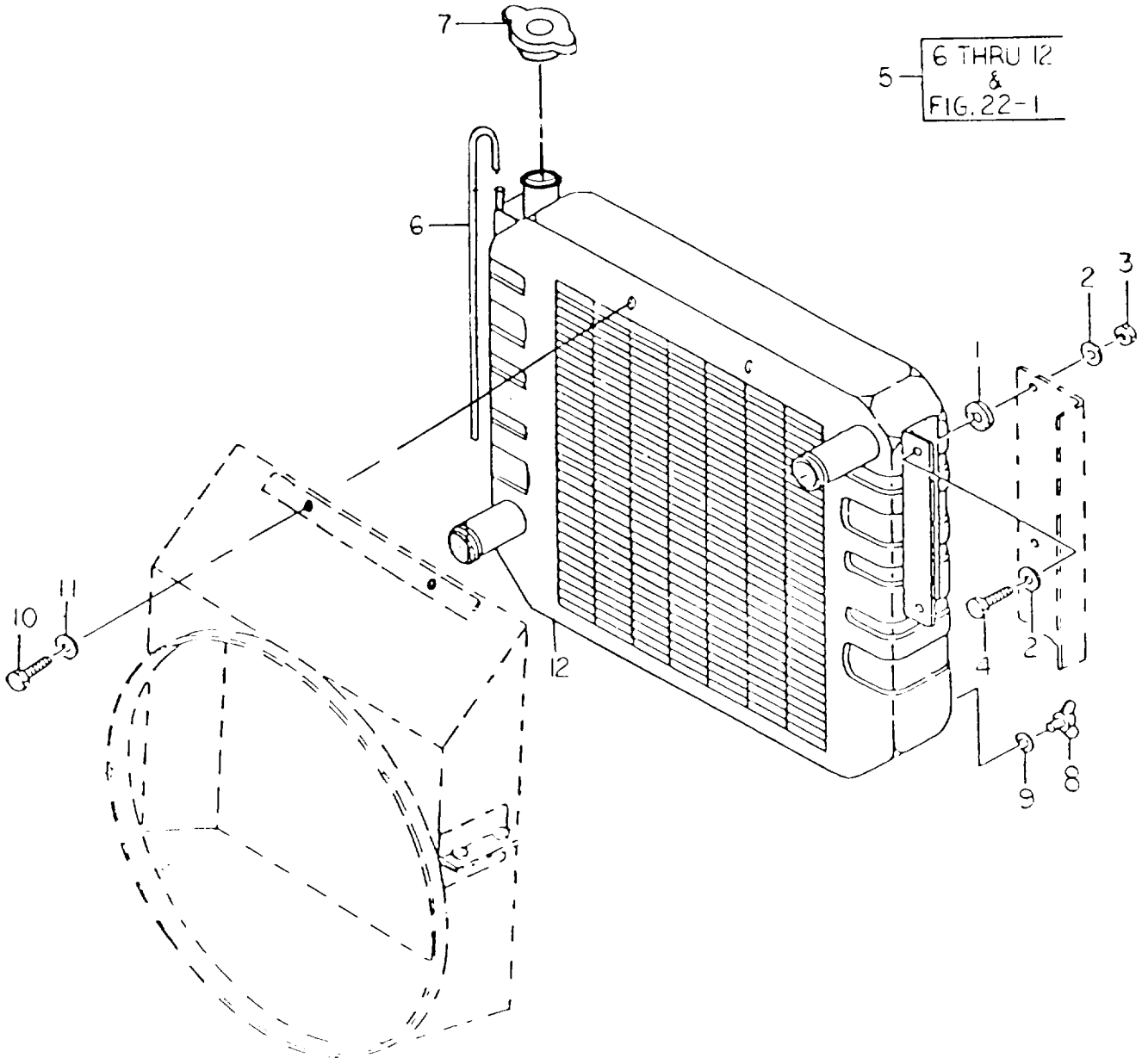

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FIGURE 21. RADIATOR ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 05 COOLING SYSTEM	
				GROUP 0501 RADIATOR	
				FIG.21. RADIATOR ASSEMBLY	
1	PFOZZ	61888	22212-10031	BUSHING, NONMETALLIC	4
2	PFOZZ	16004	82024	WASHER, FLAT.....	8
3	PFOZZ	61888	23652-12051	NUT, SELF-LOCKING HE	4
4	PFOZZ	61888	01100-08030	BOLT, MACHINE	4
5	PFOHH	61888	24442-10201	RADIATOR, ENGINE COO.....	1
6	PFOZZ	61888	23652-12121	.PIPE, PLASTIC, ...	1
7	PFOZZ	61888	23652-12111	.CAP, FILLER OPENING	1
8	PFOZZ	61888	22192-12111	.COCK, DRAIN.....	1
9	PFOZZ	61888	22192-12121	.PACKING MATERIAL	1
10	PFOZZ	61888	01100-08014	.BOLT, MACHINE	4
11	PFOZZ	96906	MS35340-45	.WASHER, LOCK.....	4
12	PFOHH	61888	24442-12001	.RADIATOR, ENGINE COO,.....	1

END OF FIGURE

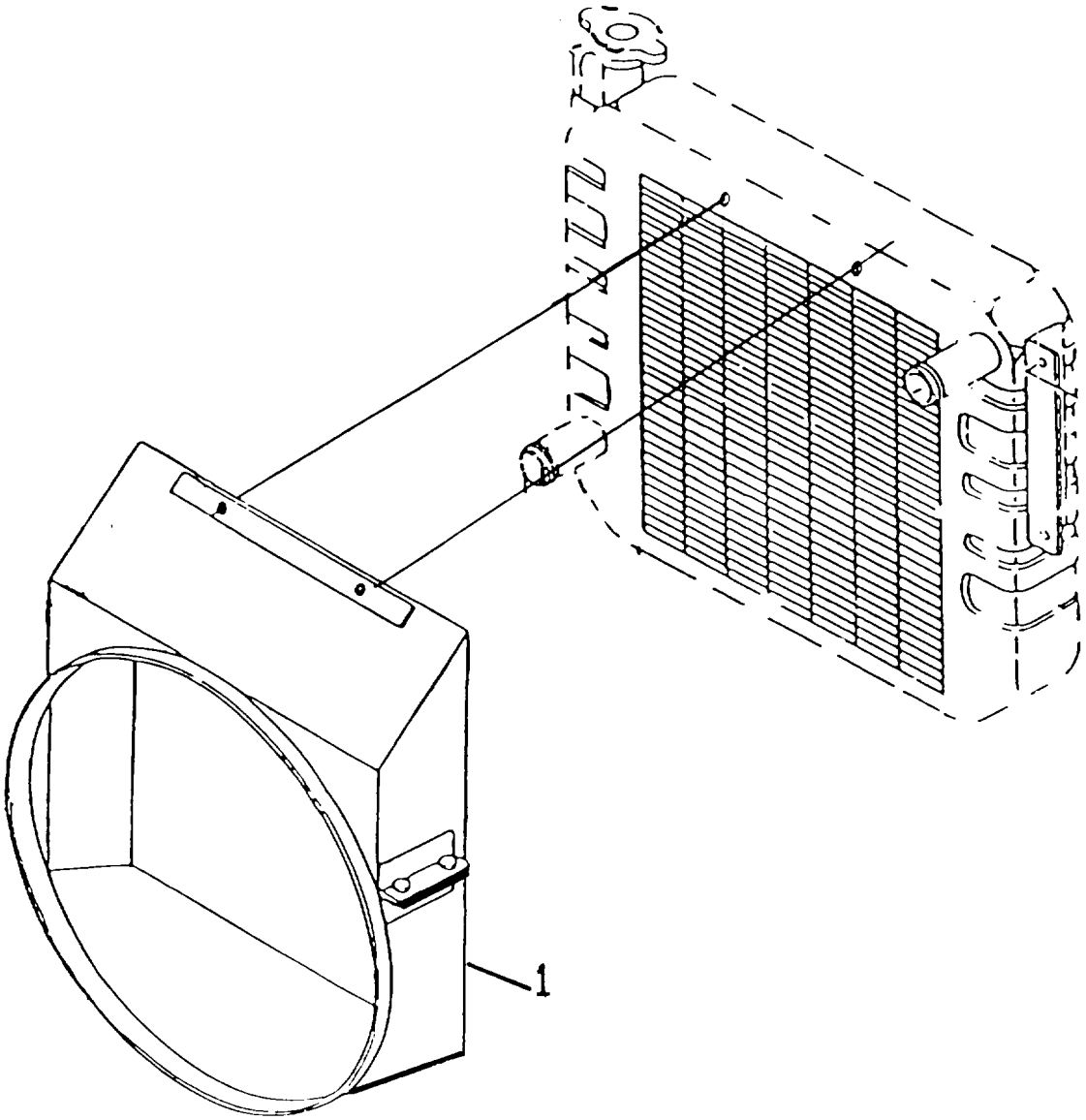

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FIGURE 22. SHROUD ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0502 SHROUD FIG. 22 SHROUD ASSEMBLY	
1	PFOZZ	61888	23652-12131	DEFLECTOR, AIRFLOW.....	1
				END OF FIGURE	

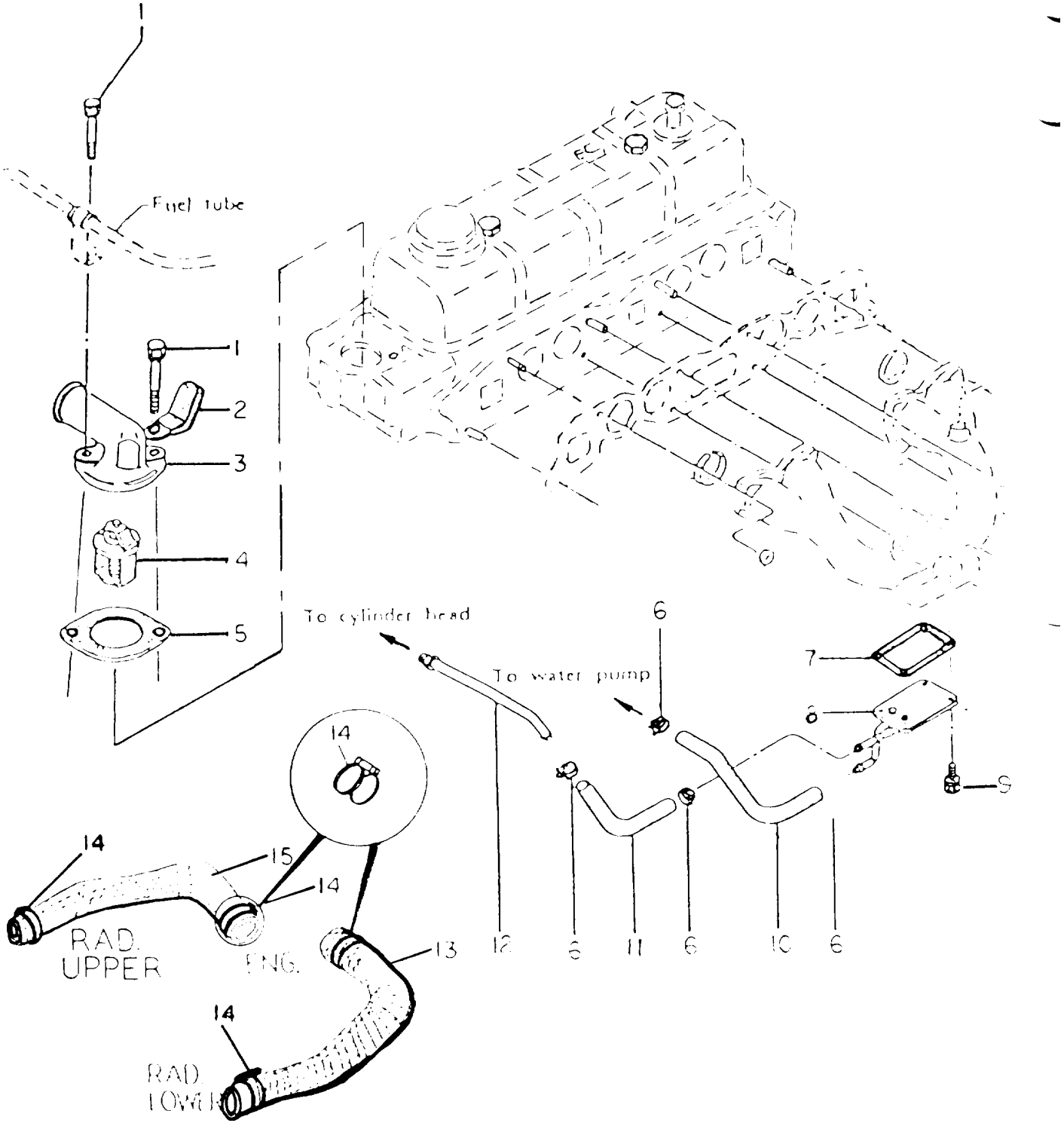

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FIGURE 23. WATER MANIFOLD, THERMOSTAT & HOUSING

	(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0503 WATER MANIFOLD, THERMOSTAT AND HOUSING GASKET	
					FIG. 23 WATER MANIFOLD, THERMOSTAT & HOUSING	
*	1	XDOZZ	61888	N-08110-83062	BOLT, ASSEMBLED WASH	2
	2	PFOZZ	61888	N-24210-89944	BRACKET, ANGLE	1
	3	PFOZZ	61888	N-11060-B8501	ELBOW, FLANGE TO HOS	1
	4	PFOZZ	61888	N-21200-H7800	THERMOSTAT, FLOW CON	1
	5	PFFZZ	61888	N-11062-S3001	GASKET PART OF KIT P/N N-10101-L1125	1
	6	PFOZZ	61888	N-08723-11600	LAMPMHOSE	4
	7	PFOZZ	61888	N-14053-L110	GASKET	1
	8	PFOZZ	61888	N-14052-L1102	PLATE, CLIP RETAINER	1
	9	PFOZZ	61888	N-08120-61262	BOLT, MACHINE	4
	10	PFOZZ	61888	N-14055-LllOO	HOSE, PREFORMED	1
	11	PFOZZ	61888	N-14054-L1100	HOSE, PREFORMED	1
	12	PFOZZ	61888	N-16903-LllOO	CONNECTOR, FLUID PUM	1
	13	PFOZZ	61888	23032-12011	HOSE, PREFORMED	1
	14	PFOZZ	61888	04911-00044	LAMP, HOSE	4
	15	PFOZZ	61888	23032-12001	HOSE, PREFORMED	1
					END OF FIGURE	

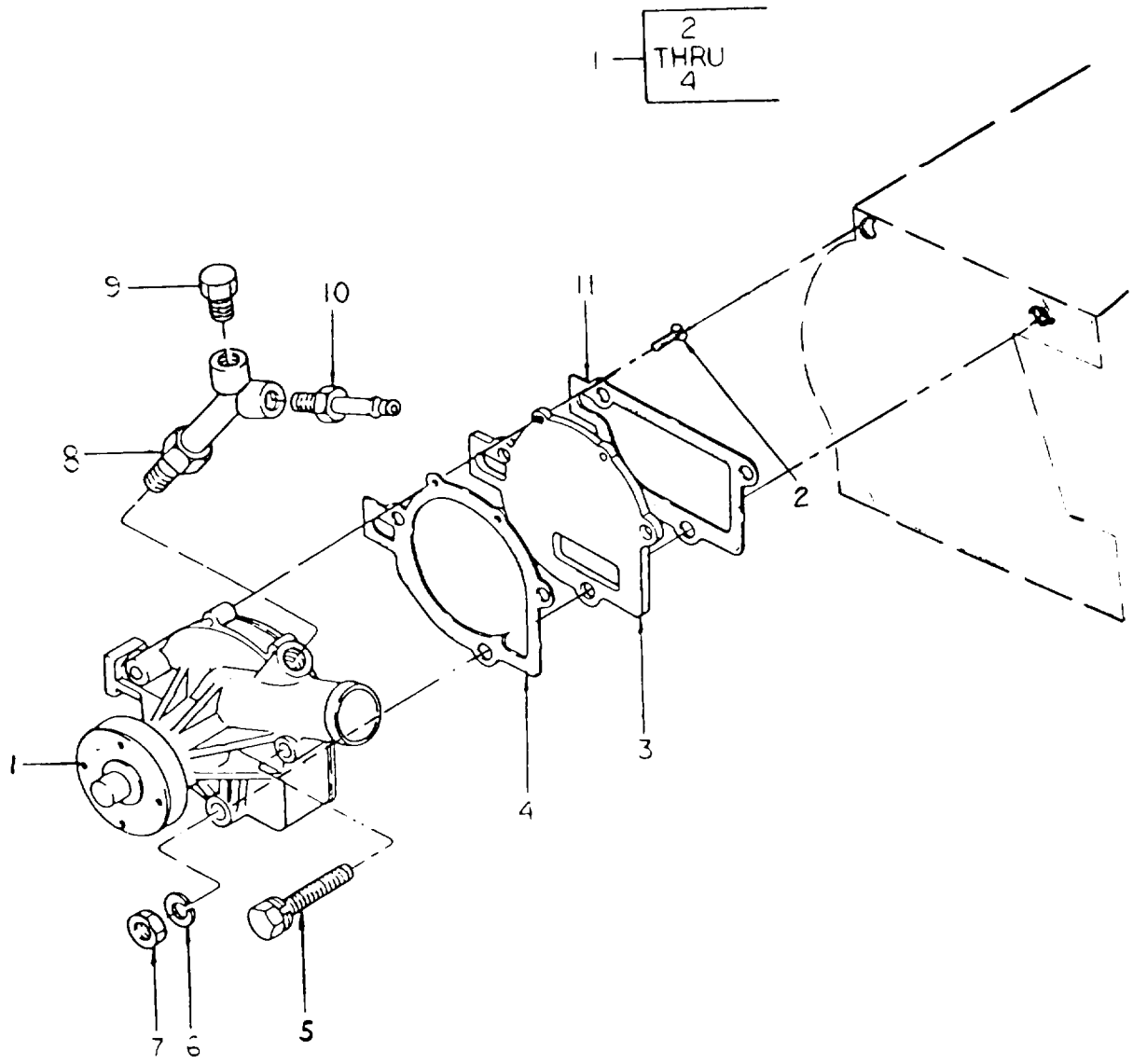

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FIGURE 24. WATER PUMP ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0504 WATER PUMP FIG. 24 WATER PUMP ASSEMBLY	
* 1	PFOZZ	61888	N-21010-L1125	WATER PUMP ASSEMBLY	1
2	PFOZZ	61888	N-21012-25500	SCREW, MACHINE	2
3	PFOZZ	61888	N-21013-78202	SPACER, PLATE	1
4	PFOZZ	61888	N-2101'-78202	GASKET	1
5	PFOZZ	61888	N-08120-86062	BOLT, ASSEMBLED WA	2
6	PFOZZ	61888	N-08915-14010	WASHER, LOCK	1
7	PFOZZ	61888	N-08911-14010	NUT, PLAIN, HEXAGON,	1
8	PFOZZ	61888	N-14059-85000	CONNECTOR, FLUID, PUM	1
9	PFOZZ	61888	N-08931-30610	PLUG, TUBE FITTING, T	1
10	PFOZZ	61888	N-14049-LllO100	CONNECTOR, FLUID, PUM	1
11	PFFZZ	61888	N-21074-69200	GASKET PART OF KIT P/N N-10101-L1125	1
				END OF FIGURE	

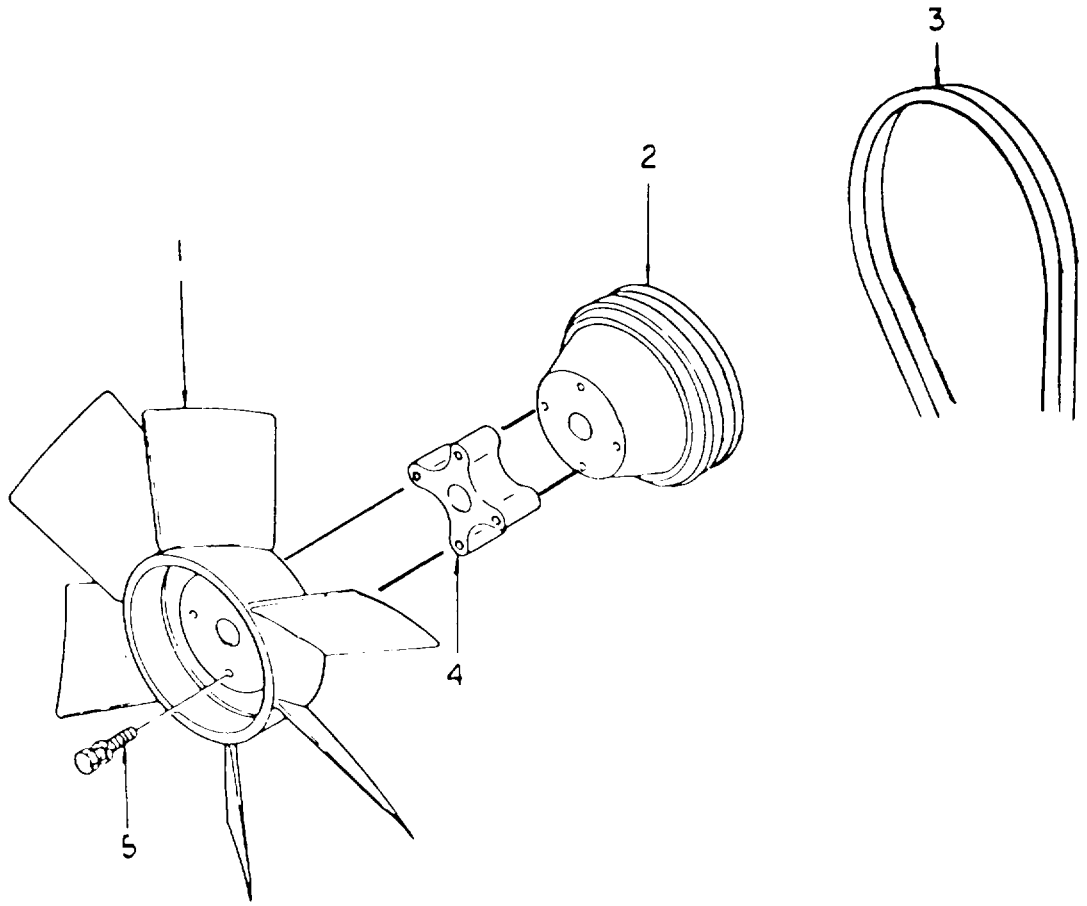

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FIGURE 25. FAN ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0505 FAN ASSEMRLY FIG. 25 FAN ASSEMBLY	
1	PFOZZ	61888	N-21060-48210	IMPELLER, FAN, CENTRI.....	1
2	PFOZZ	61888	N-21051-EO100	PULLFY, GROOVE.....	1
3	PAOZZ	61888	N-11720-L1102	BELT, V.....	1
4	PFOZZ	61888	N-21064-J5000	SPACER, PLATE.....	1
5	PFOZZ	61888	N-08120-63562	BOLT, ASSEMBLED WASH	4
				END OF FIGURE	

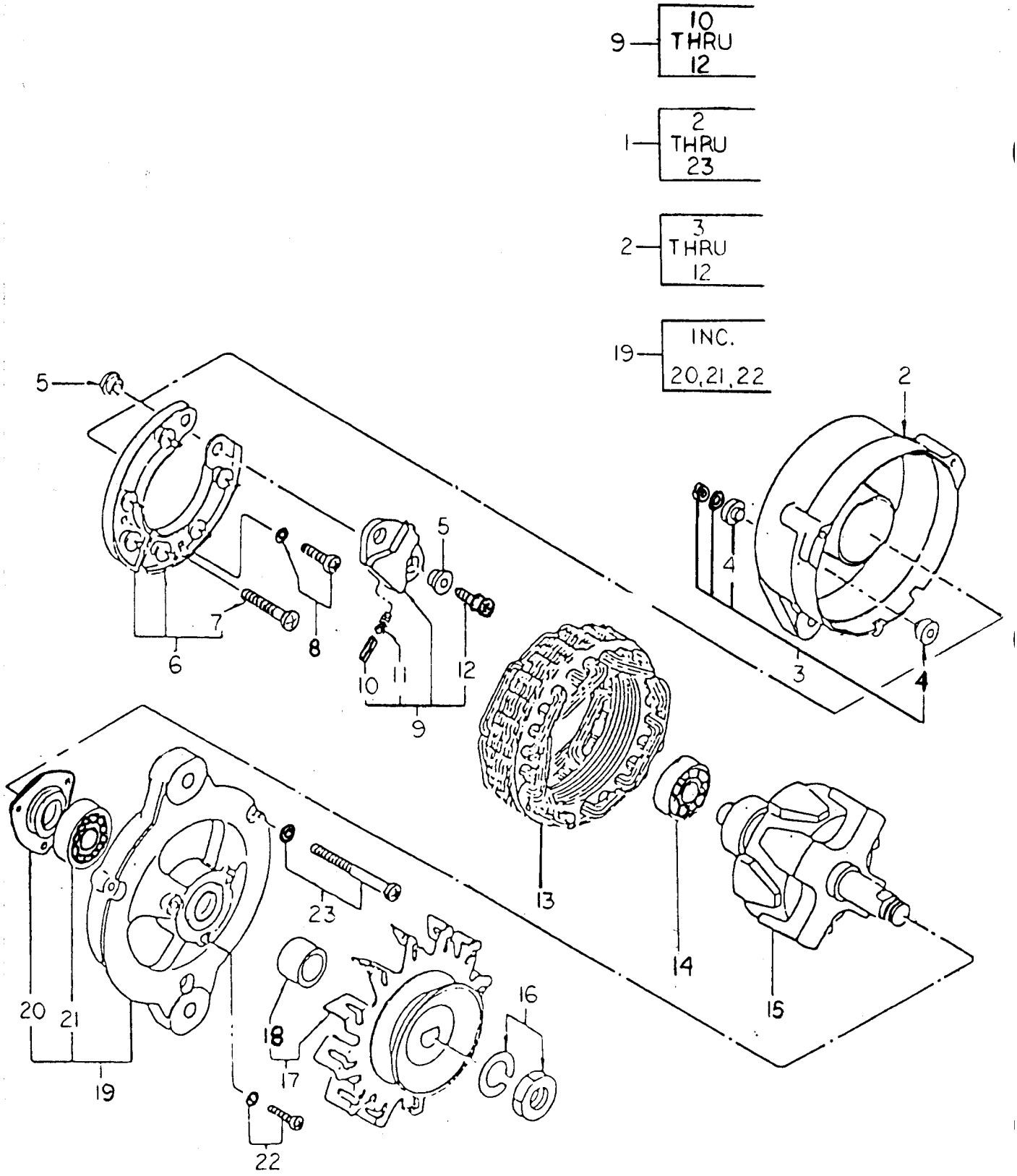

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FIGURE 26. ALTERNATOR ASSEMBLY

	(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 06 ELECTRICAL SYSTEM	
					GROUP 0601 ALTERNATOR	
					FIG. 26 ALTERNATOR ASSEMBLY	
	1	PFOZZ	61888	N-23100-M0413	GENERATOR,ALTERNATI	1
	2	XAFZZ	61888	N-23127-U011	. BRACKET, ASSY. REAR	1
	3	PFFZZ	61888	N-23158-U0110	. . NUT ASSORTMENT	1
	4	XAFZZ	61888	99999-01023	. . . INSULATOR	2
*	5	XDFZZ	61888	N-23170-P4510	. . INSULATOR, BUSHING	2
	6	PFFZZ	61888	N-23230-U0110	. . RECTIFIER ASSEMBLY	1
	7	XAFZZ	61888	99999-01022	. . . SCREW	1
	8	PFFZZ	61888	N-23141-P4510	. . SCREW,ASSEMBLED WA	1
	9	PFFZZ	61888	N-23133-P4510	. . HOLDER ASSEMBLY, ELE	1
	10	PFFZZ	61888	N-23135-P4510	. . . BRUSH, ELECTRICAL C	2
	11	PFFZZ	61888	N-23138-A5510	. . . SPRING,HELICAL,TO	2
	12	XAFZZ	61888	99999-01024	. . . SCREW	2
	13	XAFZZ	61888	N-23102-U0110	. STATOR ASSEMBLY	1
	14	PFFZZ	61888	N-23120-14610	. BEARING, BALL, THRU	1
	15	XAFZZ	61888	N-23108-M0412	. ROTOR ASSEMBLY	1
	16	PFFZZ	61888	N-23153-M0412	. NUT ASSEMBLY RETAI	1
*	17	XDFZZ	61888	N-23150-B9810	. PULLEY ASSEMBLY	1
	18	XAFZZ	61888	99999-01026	. . BUSHING	1
	19	XAFZZ	61888	N-23118-U0110	. BRACKET,ASSY. FRONT	1
	20	XAFZZ	61888	99999-01025	. . WASHER, THRUST	1
*	21	PFFZZ	61888	N-23120-W1710	. . BEARING, BALL, ANNULA	1
	22	PFFZZ	61888	N-23115-A5510	. . SCREW, ASSEMBLED WA	1
	23	PFFZZ	61888	N-23131-U0110	. . BOLT, ASSEMBLED WAS	1
					END OF FIGURE	

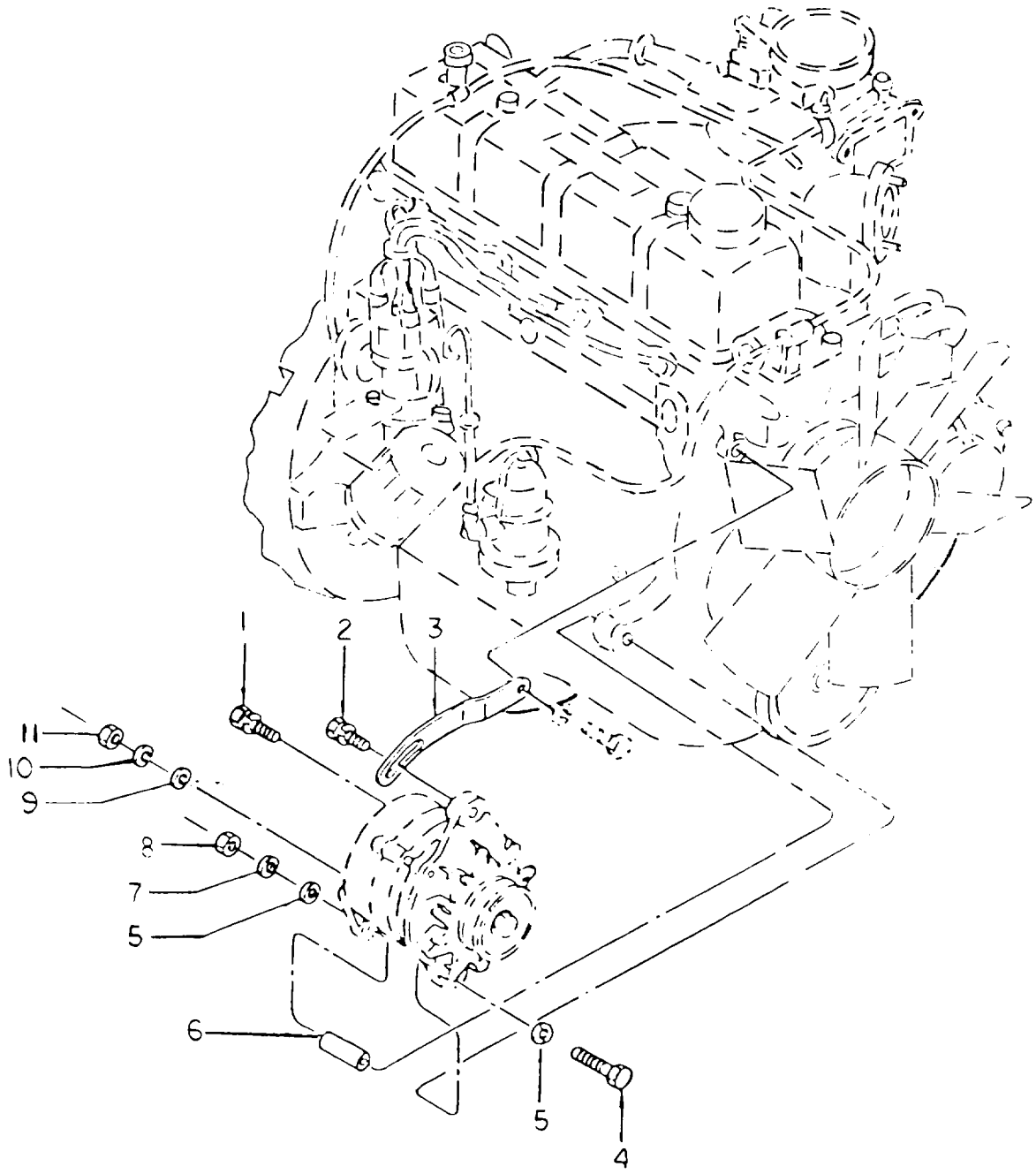

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FIGURE 27. ALTERNATOR, MOUNTING

	(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0601 ALTERNATOR	
					FIG. 27 ALTERNATOR, MOUNTING	
*	1	XDOZZ	61888	N-08360-51014	SCREW, ASSEMBLED WAS	1
	2	PFOZZ	61888	N-23164-HO100	BOLT, ASSEMBLED WA.....	1
	3	PFOZZ	61888	N-11715-L1103	BRACKET, ANGLE.....	1
	4	PFOZZ	61888	N-08130-80510	BOLT, MACHINE.	1
	5	PFOZZ	61888	N-08915-43810	WASHER, FLAT	2
	6	PFOZZ	61888	N-1171Z-L6800	BUSHING, SLEEVE.....	1
*	7	PAOZZ	96906	MS35340-45	WASHER, LOCK	1
	8	PFOZZ	61888	N-08911-20810	NUT, PLAIN, HEXAGON	1
	9	PFOZZ	61888	N-08915-43510	WASHER, FLAT	1
	10	PFOZZ	61888	N-08915-13510	WASHER, LOCK	1
	11	PFOZZ	61888	N-08911-10510	NUT, PLAIN, HEXAGON	1
					END OF FIGURE	

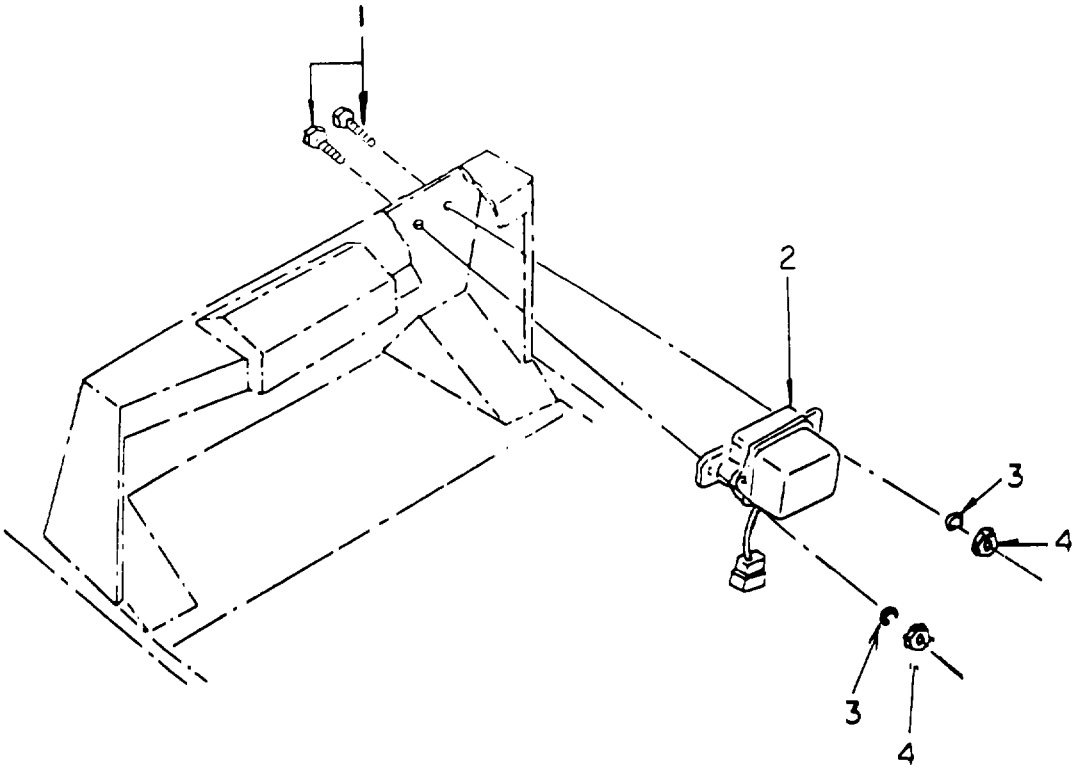

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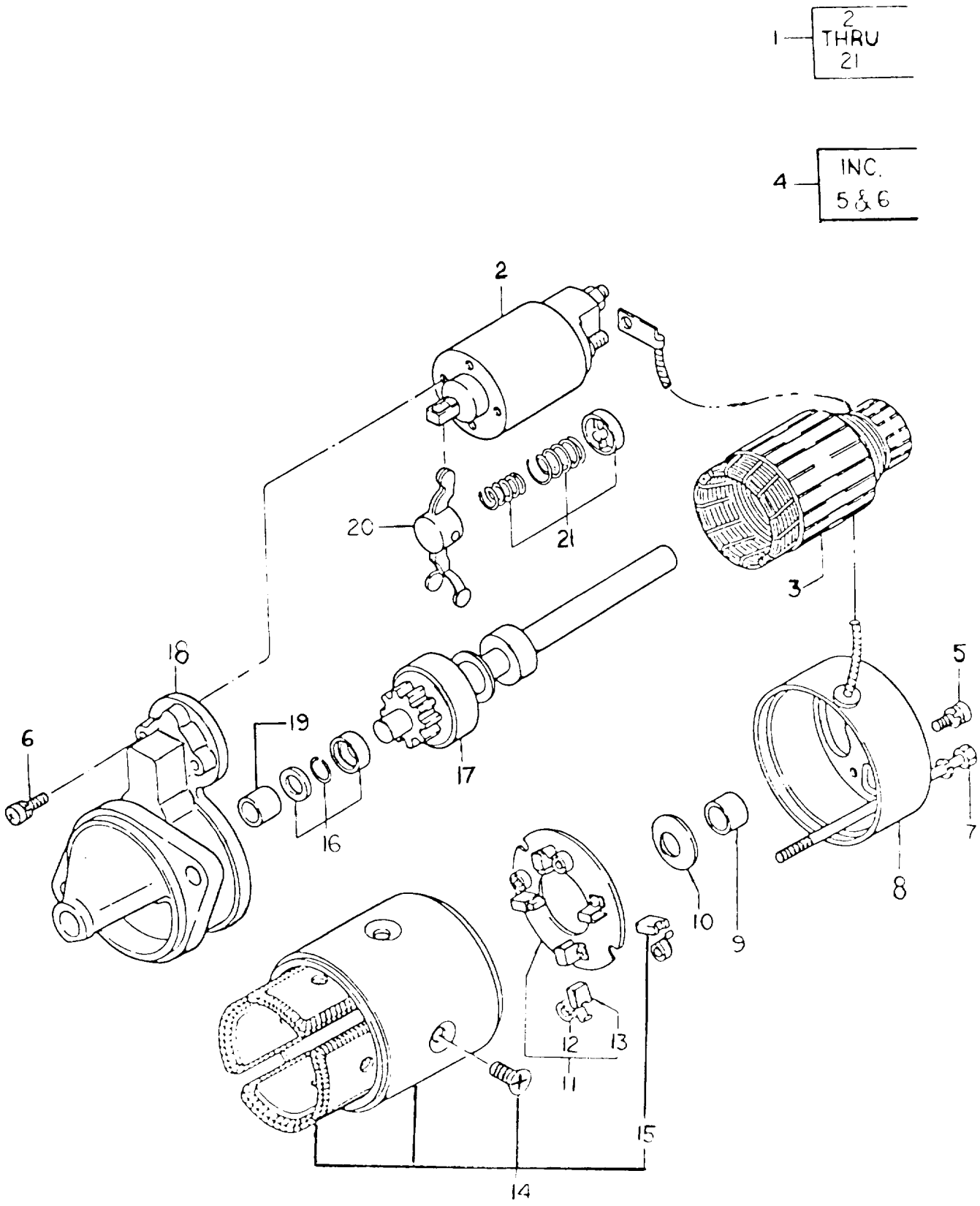
FIGURE 28. REGULATOR & MOUNTING

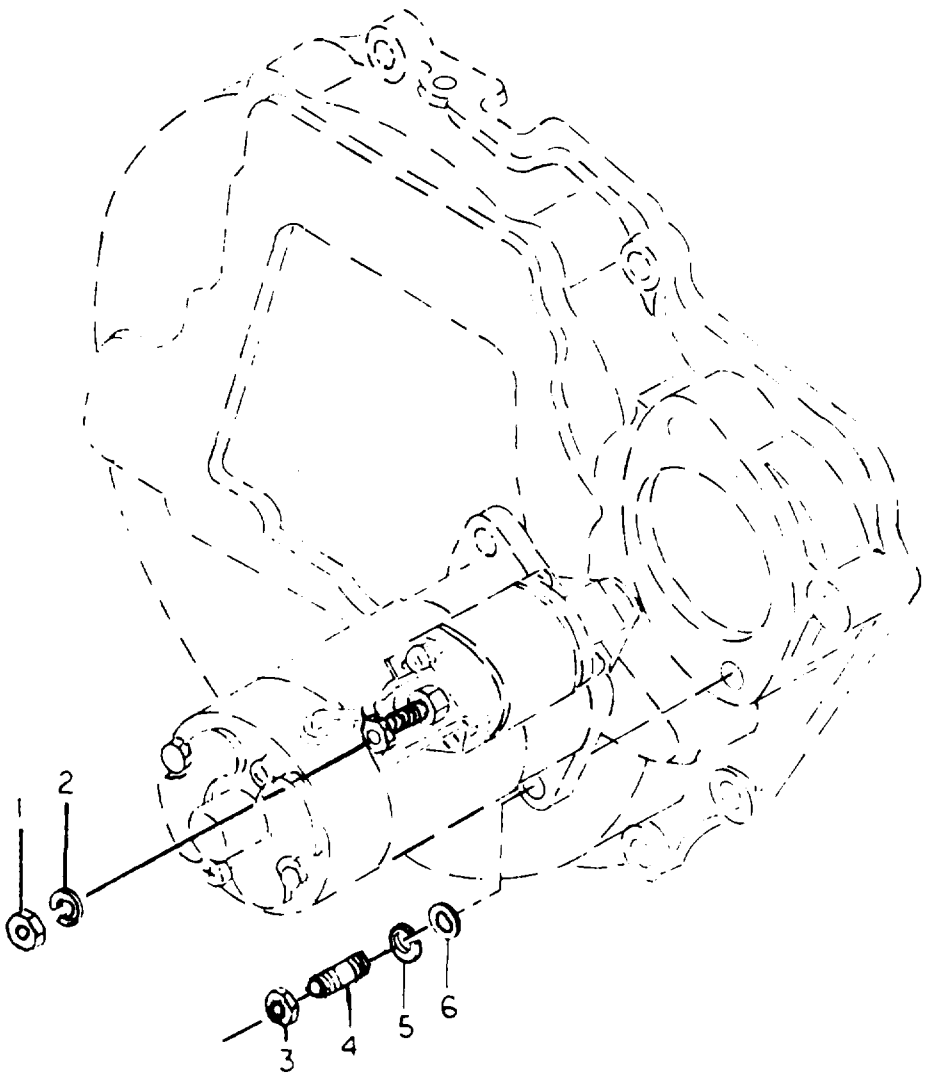
(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0602 GENERATOR REGULATOR	
				FIG. 28 REGULATOR & MOUNTING	
1	PFOZZ	61888	01100-06016	BOLT, MACHINE	2
2	PFOZZ	61888	N-23500-L0411	REGULATOR, ENGINE G	1
3	PFOZZ	61888	02010-00006	WASHER, LOCK	2
4	PFOZZ	61888	01400-00006	NUT, PLAIN, HEXAGON	2
				END OF FIGURE	



TA265159

FIGURE 29. STARTER ASSEMBLY

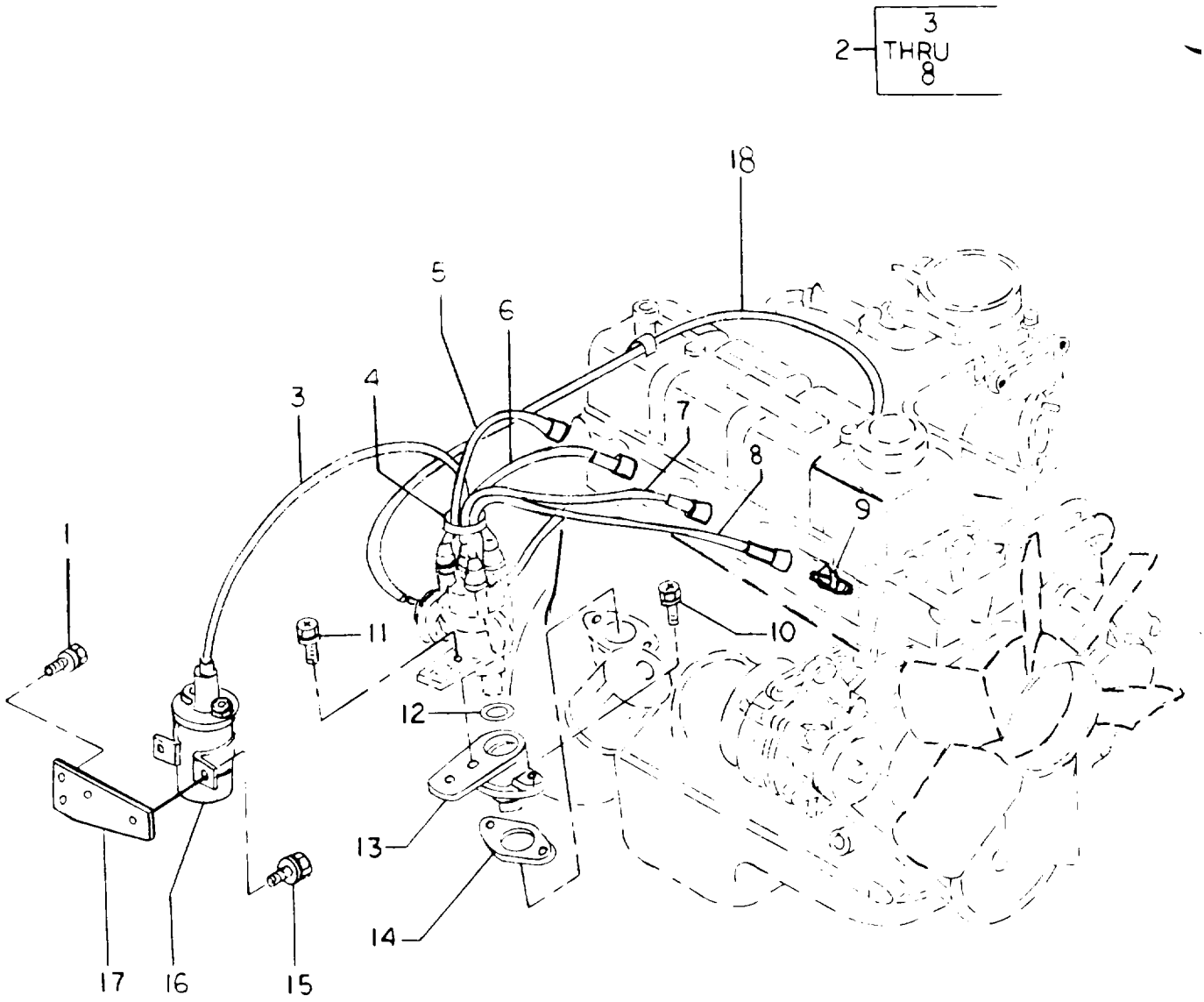
	(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0603 STARTING MOTOR	
					FIG. 29 STARTER ASSEMBLY	
*	1	PFOFF	61888	N-23300-P5113	STARTER, ENGINE, ELEC	1
*	2	PFFZZ	61888	N23343-Y0513	. RELAY-SOLENOID, ENGI	1
	3	XAFZZ	61888	N-23310-B6010	. ARMATURE	1
	4	PFFZZ	61888	N-23480-MO110	. SCREW,ASSEMBLED WA	1
	5	XAFZZ	61888	99999-01039	. . SCREW.	2
	6	XAFZZ	61888	99999-01040	. . SCREW	2
	7	PFFZZ	61888	N-23340-B6010	. BOLT, SHOULDER	2
	8	XAFZZ	61888	N-23337-P0610	. BRACKET ASSY, REAR	1
	9	PFFZZ	61888	N-23338-P0610	. BUSHING, SLEEVE	1
	10	PFFZZ	61888	N-23460-B5010	. WASHER, FLAT	1
	11	PFFZZ	61888	N-23378-E3011	. HOLDER ASSEMBLY, ELE	1
*	12	PFFZZ	61888	N23333-M1510	. . SPRING	3
	13	PFFZZ	61888	N-23380-UO110	. . BRUSH, ELECTRICAL C	1
	14	XAFZZ	61888	N-23302-P5110	. YOKE ASSEMBLY	1
	15	PAFZZ	61888	N-23380-E3010	. . BRUSH,ELECTRICAL C	2
	16	PFFZZ	61888	N-23465-P0610	. PARTS KIT STARTER D	1
	17	XAFZZ	61888	N-23312-Y0511	. GEAR ASSY. , CLUTCH	1
	18	XAFZZ	61888	N-23318-P5112	. BRACKET ASSY. ,FRONT	1
	19	PFFZZ	61888	N-23319-MO110	. BUSHING, SLEEVE	1
	20	XAFZZ	61888	N-23322-Y0510	. LEVER, ASSY, SHIFT	1
	21	XAFZZ	61888	N-23475-E3010	. SPRING SET	1
					END OF FIGURE	



TA265160

FIGURE 30. STARTER, MOUNTING

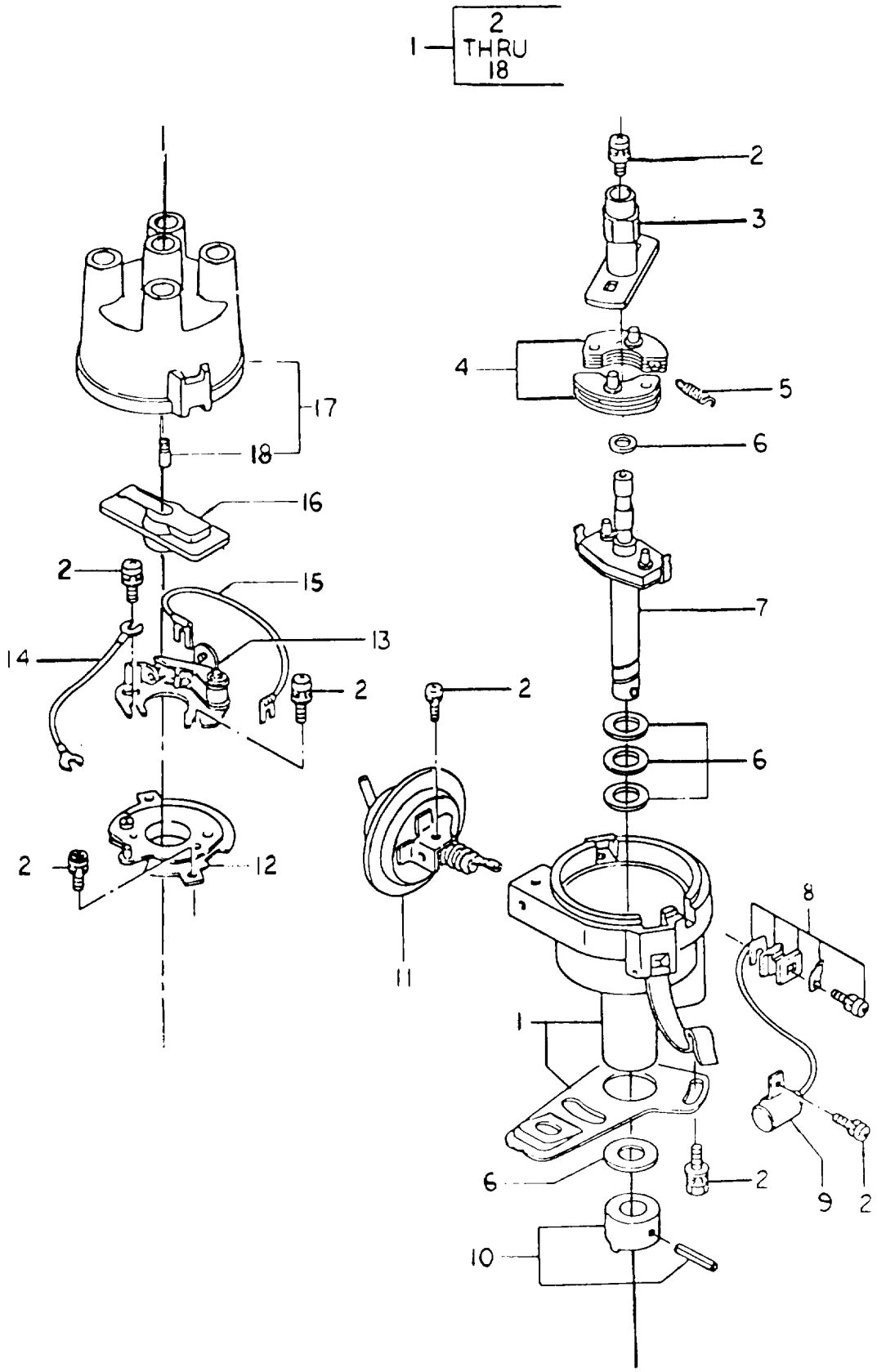
	(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0603 STARTING MOTOR	
					FIG. 30 STARTERS MOUNTING	
	1	PFOZZ	61888	N-08911-30810	NUT, PLAIN, HEXAGON	1
*	2	PAOZZ	96906	MS35340-45	WASHER, LOCK	1
*	3	XDOZZ	61888	N-08911-24010	NUT, PLAIN, HEX .	2
	4	PFOZZ	61888	N-08227-24010	STUD, SHOULDERED	2
*	5	PAOZZ	96906	MS35340-45	WASHER, LOCK	2
*	6	XDOZZ	61888	N-08915-44010	WASHER, FLAT	2
					END OF FIGURE	



TA265161

FIGURE 31. IGNITION COMPONENTS

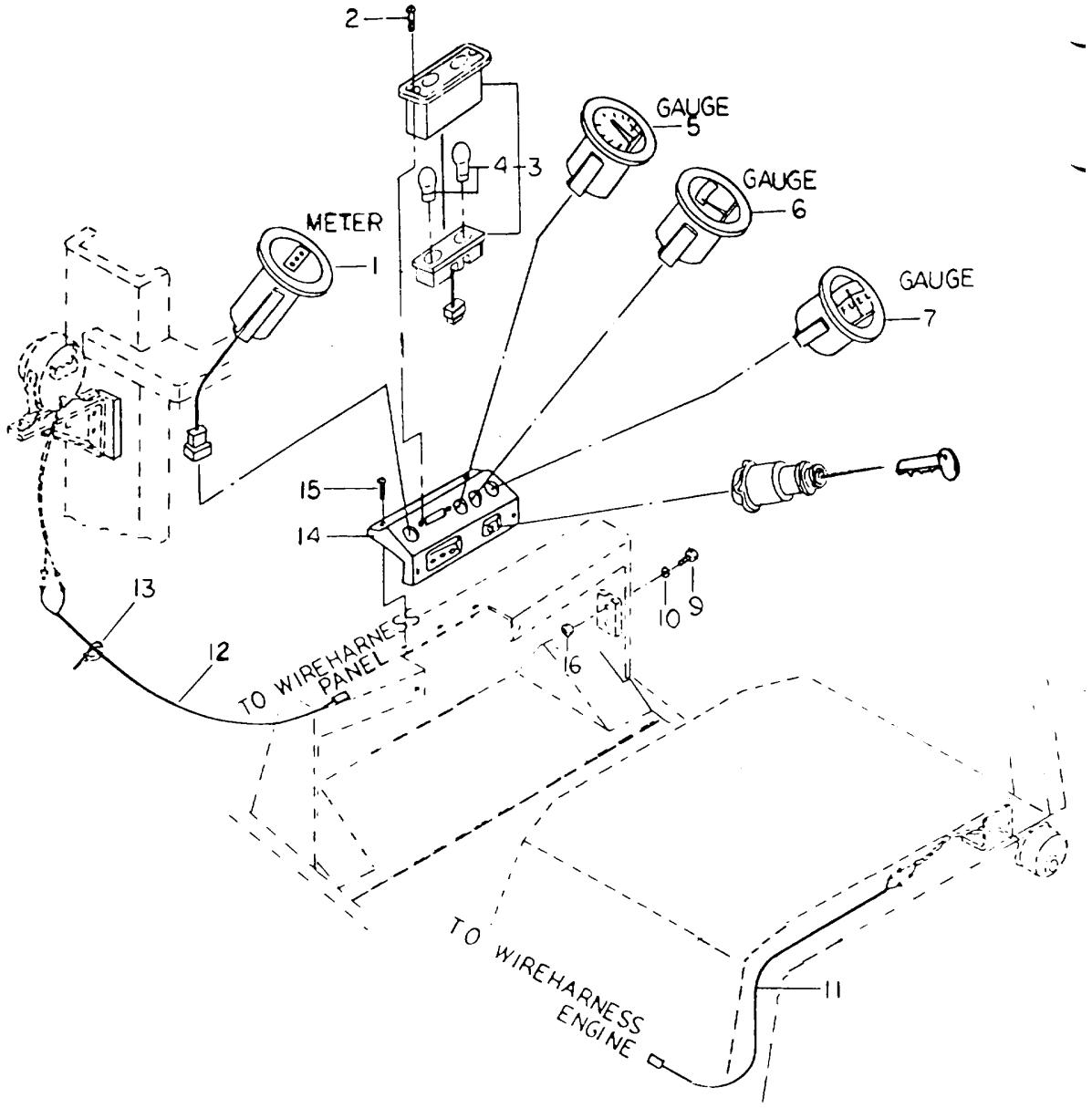
(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0605 IGNITION COMPONENTS	
				FIG. 31 IGNITION COMPONENTS	
1	PFOZZ	61888	N-08110-81626	SCREW, ASSEMBLED WA	2
2	PFOZZ	61888	N-22450-L1051	LEAD SET, IGNITION, E	1
3	XDOZZ	61888	N-22450-Y4401	. CABLE, COIL TO DIST	1
4	XDOZZ	61888	N-22431-10560	. RING, HIGH TNSN	1
5	XDOZZ	61888	N-22454-80001	. CABLE ASSEMBLY	1
6	XDOZZ	61888	N-22453-66001	. CABLE ASSEMBLY #3	1
7	XDOZZ	61888	N-22452-66001	. CABLE ASSEMBLY #2	1
8	XDOZZ	61888	N-22451-66001	. CABLE ASSEMBLY #I	1
9	XDOZZ	19728	14G5	SPARK PLUG.	4
10	PFOZZ	61888	N-08120-62262	SCREW, ASSEMBLED WA	2
11	PFOZZ	61888	N-08360-61226	SCREW, ASSEMBLED WA	1
12	PFFZZ	61888	N-22180-71200	PACKING PREFORMED PART OF KIT P/N N-10101-L1125, 112	1
13	XDOZZ	61888	N-22178-73600	BRACKET, EYE, NON	1
14	PFFZZ	61888	N-22179-E3000	GASKET PART OF KIT P/N N-10101-L1125	1
15	PFOZZ	61888	N-08110-81225	SCREW,ASSEMBLED WA	2
16	PFOZZ	61888	N-22433-L111O	OIL, IGNITION	1
17	PFOZZ	61888	N-22435-LllO1	PLATE, CLIP RETAIN	1
18	PFOZZ	61388	N-22318-25501	HOSE, NONMETALLIC	1
				END OF FIGURE	



TA265162

FIGURE 32. DISTRIBUTOR ASSEMBLY

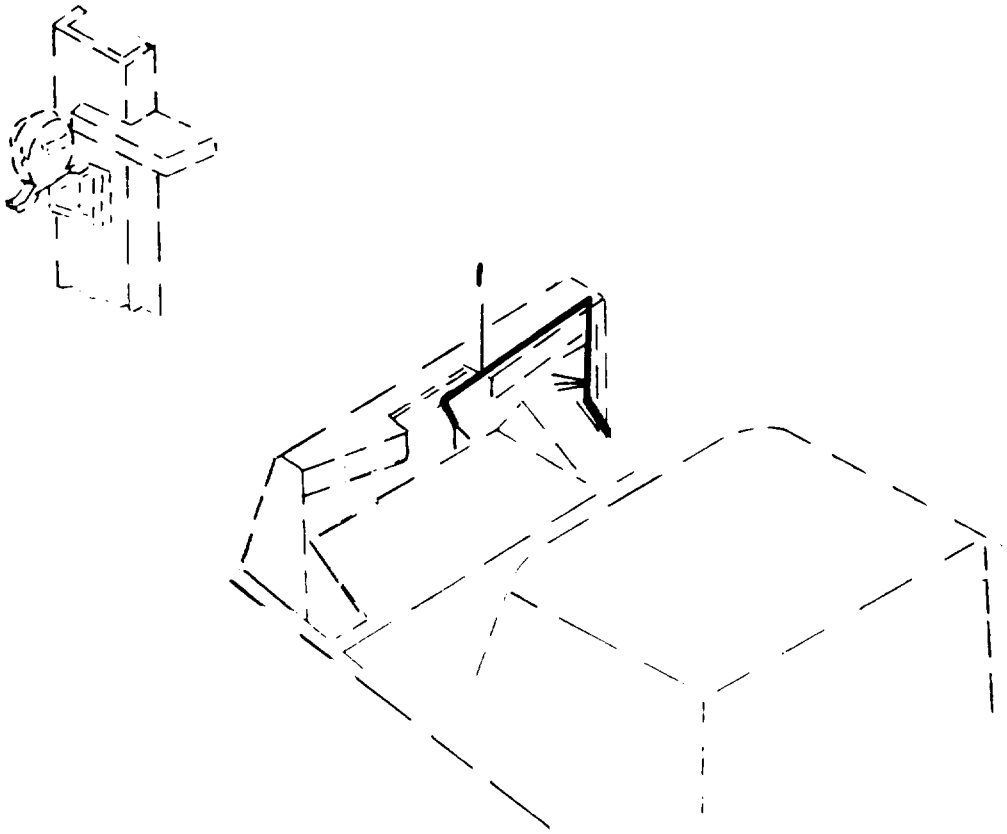
(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0605 IGINTION COMPONENTS	
				FIG. 32 DISTRIBUTOR ASSEMBLY	
1	PFOZZ	61888	N-22100-K7201	DISTRIBUTOR, IGNITIO	1
2	PFFZZ	61888	N-22750-H2300	. SCREW ASSORTMENT	1
3	PFFZZ	61888	N-22132-20605	. CAM, IGNITION DISTR	1
4	PFFZZ	61888	N-22109-71300	. WEIGHT, IGNITION DI	2
5	PFFZZ	61888	N-22110-K7201	. SPRING, HELICAL, EX	2
6	PFFZZ	61888	N-22160-M0800	. WASHER ASSORTMENT	1
7	XAFZZ	61888	N-22108-71302	. SHAFT ASSEMBLY	1
8	PFFZZ	61888	N-22403-18005	. TERMINAL ASSEMBLY	1
9	PAFZZ	61888	N-22102-D1100	. CAPACITOR	1
10	XDFZZ	61888	N-22119-71300	. COLLAR, SHAFT	1
11	PFFZZ	61888	N-22301-K7201	. VALVE, VACUUM BREAK	1
12	PFFZZ	61888	N-22136-H2300	. PLATE, IGNITION CON	1
13	PAFZZ	19728	SRP-2227	. CONTACT SETDISTRIB	1
14	PFFZZ	61888	N-22182-71300	. LEAD, IGNITION, ENGIN	1
15	PFFZZ	61888	N-22183-71300	. LEAD, IGNITION, ENGIN	1
16	PAFZZ	61888	N-22157-H1001	. ROTOR,DISTRIBUTOR	1
17	XDFZZ	61888	N-22162-N8800	. CAP, IGNITION DISTRI	1
18	XAFZZ	61888	N-22165-30101	. . POINT ASSY. CARBON	1
				END OF FIGURE	



TA265163

FIGURE 33. INSTRUMENT CONTROL PANEL

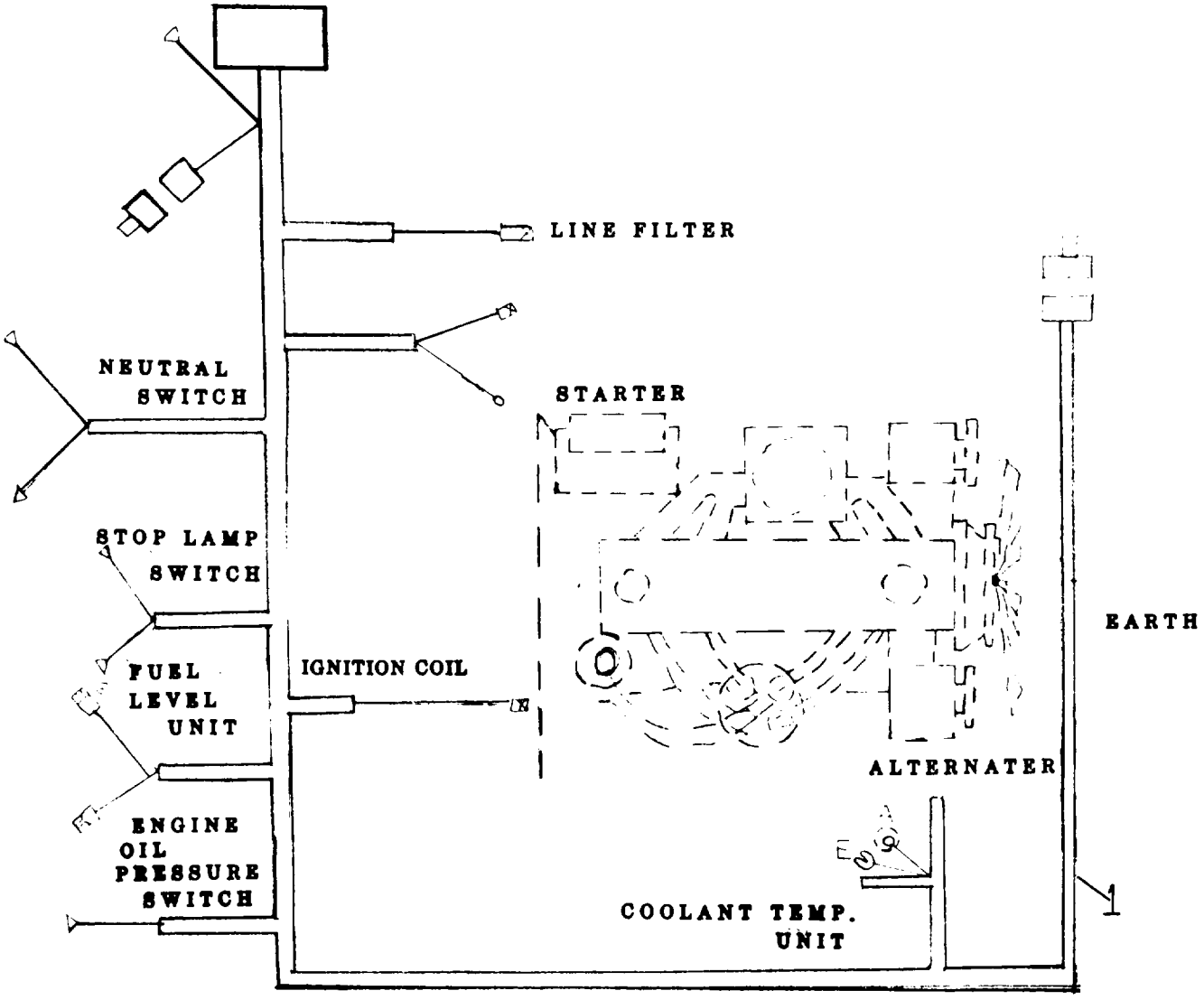
(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0607 INSTRUMENT PANEL	
				FIG. 33 INSTRUMENT CONTROL PANEL	
1	PFOZZ	61888	24352-42031	METER, TIME TOTALIZ	1
2	PFOZZ	61888	01030-04012	SCREW, MACHINE	2
3	PFOZZ	61888	23302-42301	LIGHT ASSEMBLY, IND	1
4	PAOZZ	81348	W-L-00111/61	. LAMP, INCANDESCENT	2
* 5	PFOZZ	61888	25079-10322A	METER, SPECIAL SCALE	1
6	PFOZZ	61888	23652-42351	INDICATOR, TEMPERAT	1
7	PFOZZ	61888	22672-42061	GAGE, LIQUID QUANTI	1
8	PFOZZ	13445	956-3125	LOCK, IGNIT	1
9	PFOZZ	61888	01100-04016	BOLT, MACHINE	2
10	PFOZZ	61888	02000-00004	WASHER, FLAT	2
* 11	XDOZZ	61888	78260-69316	CABLE AND CONDUIT	1
* 12	XDOZZ	61888	78260-69312	CABLE AND CONDUIT	1
* 13	PFOZZ	96906	MS3367-4-9	STRAP, TIEDOWN, ELECT	4
14	PFOZZ	61888	78260-69322	BEZEL, INSTRUMENT	1
* 15	PFOZZ	61888	23656-42331	SCREW, CAP, SOCKET HE	5
16	PFOZZ	61888	01400-00004	NUT, PLAIN, HEXAGON	2
				END OF FIGURE	



TA265164

FIGURE 34. CONTROL PANEL, WIREHARNESS

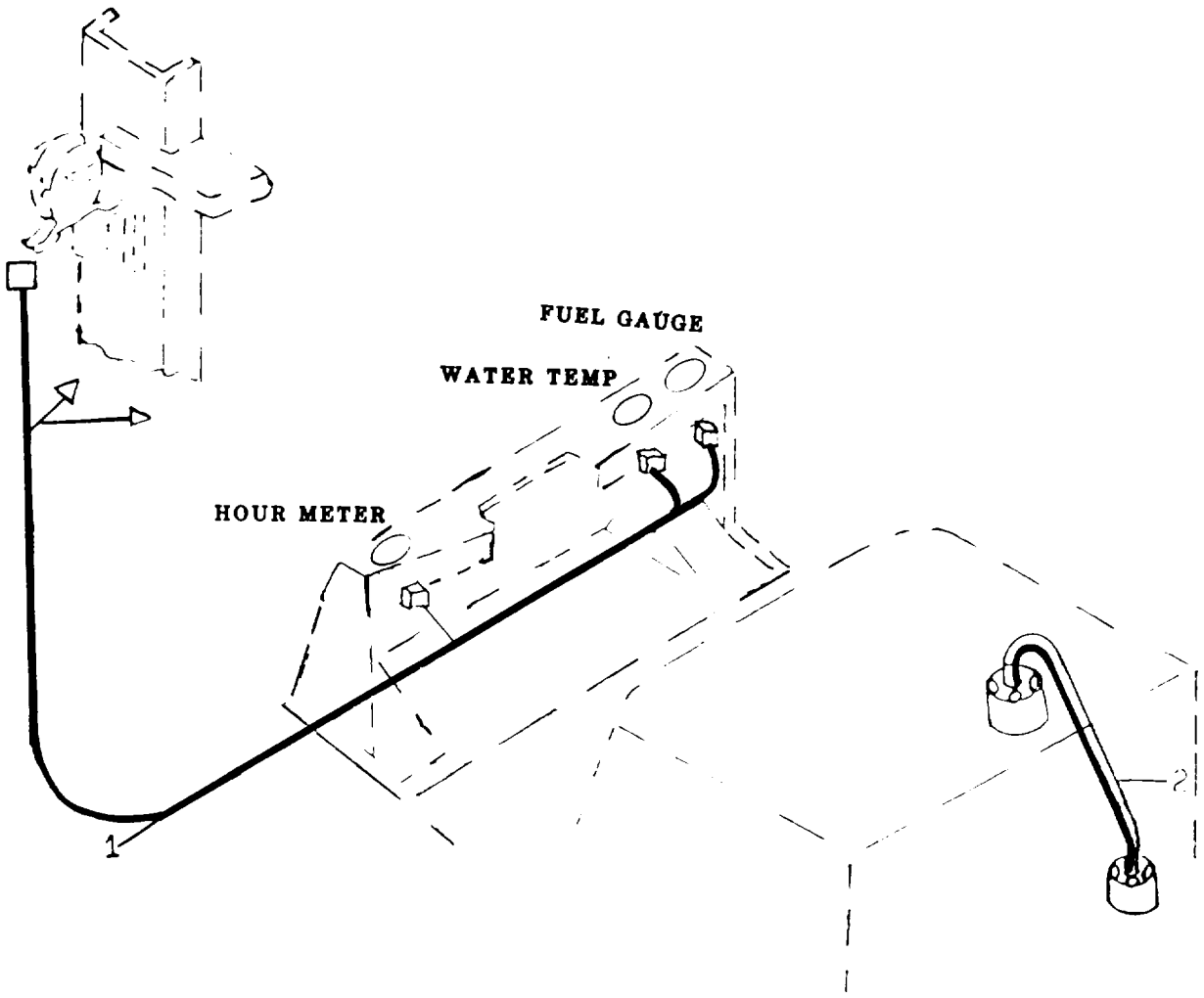
(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0607 INSTRUMENT PANEL	
				FIG. 34 CONTROL PANEL, WIREHAPNESS	
1	PFOZZ	61888	78260-69313	WIRING HARNESS, BR	1
				END OF FIGURE	



TA266165

FIGURE 35. ENGINE, WIREHARNESS

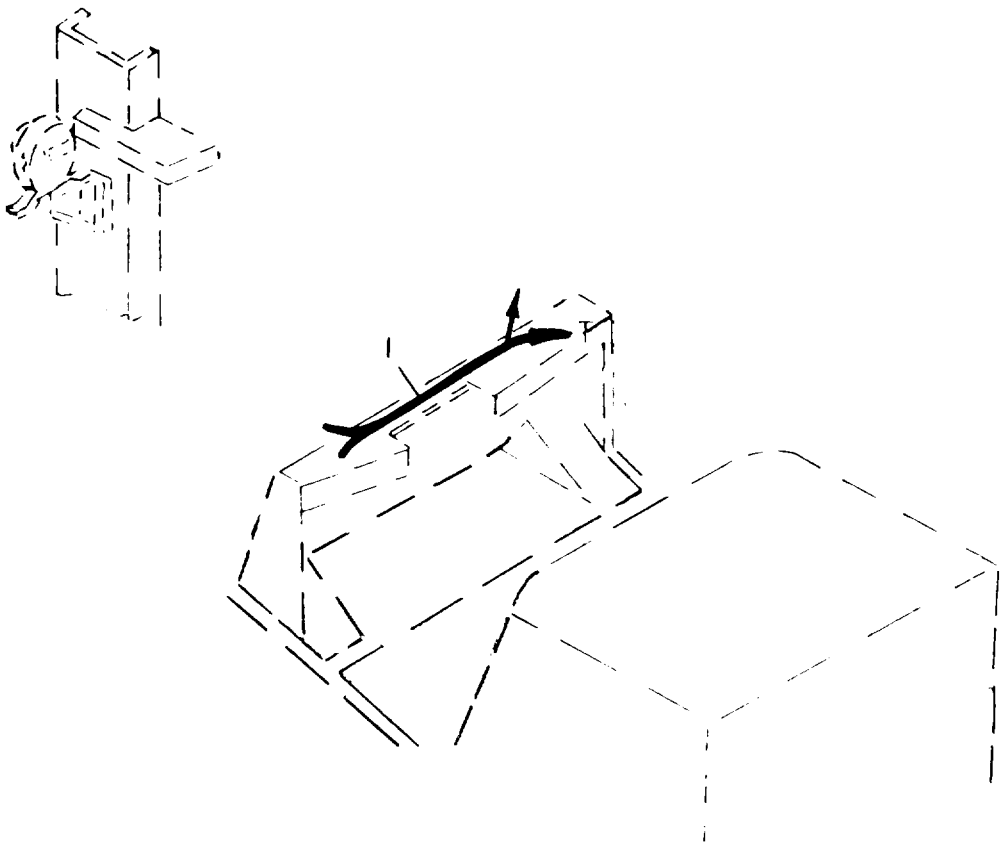
(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0607 INSTRUMFNT PANEL	
				FIG. 35 ENGINE, WIREHARNESS	
1	PFOZZ	61888	78260-69314	WIRING HARNESS,BR	1
				END OF FIGURE	



TA265166

FIGURE 36. CABINET, WIREHARNESS

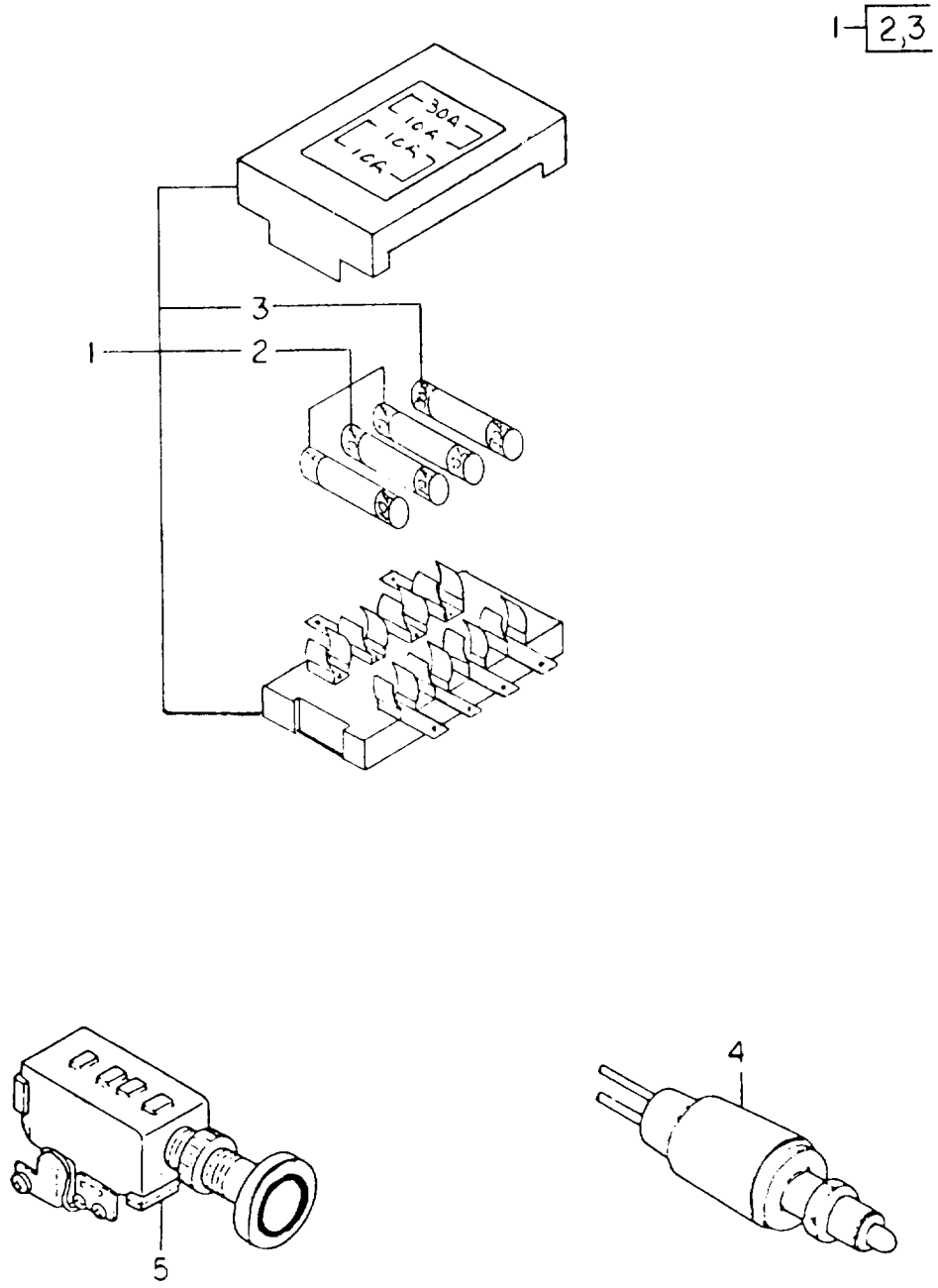
(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0607 INSTRUMENT PANEL	
				FIG. 36 CABINET, WIRE HARNESS	
1	PFOZZ	61888	78260-69315	WIRING HARNESS, BR	1
2	PFOZZ	61888	22192-42171	CABLE ASSEMBLY, SPE.....	1
				END OF FIGURE	



TA265167

FIGURE 37. AMMETER, WIREHARNESS

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0607 INSTRUMENT PANEL	
				FIG. 37. AMMETERT WIRE HARNESS	
1	PFOZZ	61888	78260-69317	CABLE ANP CONDUIT	1
				END OF FIGURE	

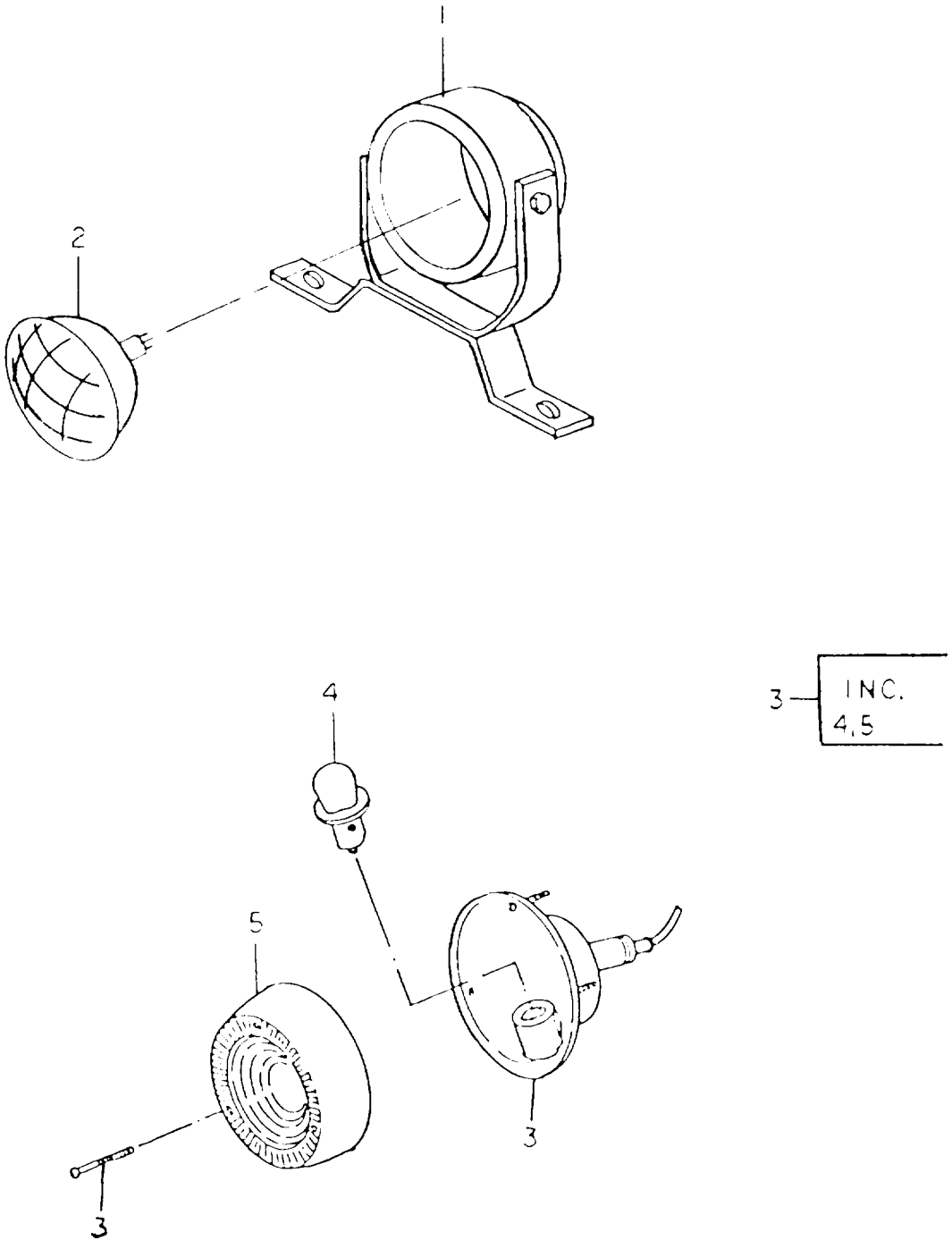


TA265168

FIGURE 38. FUSE BOX, LIGHT AND STOP SWITCH

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0608 MISCELLANFOUS ITEMS	
				FIG. 38. FUSE BOX, LIGHT AND STOP SWITCH	
1	PFOZZ	61888	23652-42341	FUSE BOX1	1
2	PAOZZ	81349	F03A125V30A	FUSE, CARTRIDGE	2
3	PAOZZ	81349	FO2A125V1OAS	FUSE, CARTRIDGE	4
4	PFOZZ	61888	23232-42072	SWITCH, STNP	1
5	PFOZZ	61888	23652-42221	SWITCH, PUSH-PULL	1

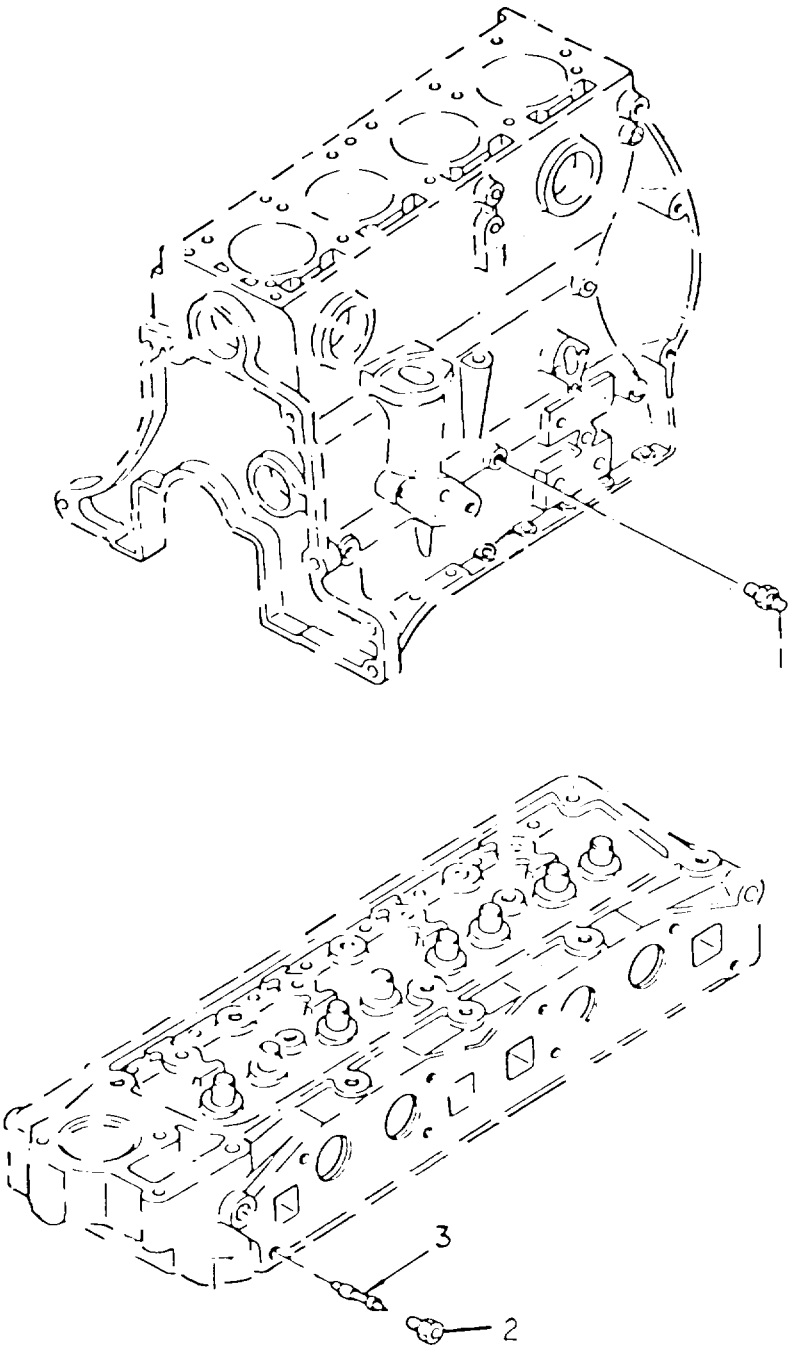
FND OF FIGURE



TA265169

FIGURE 39. FLOOD LAMP & TAIL LAMP ASSEMBLY

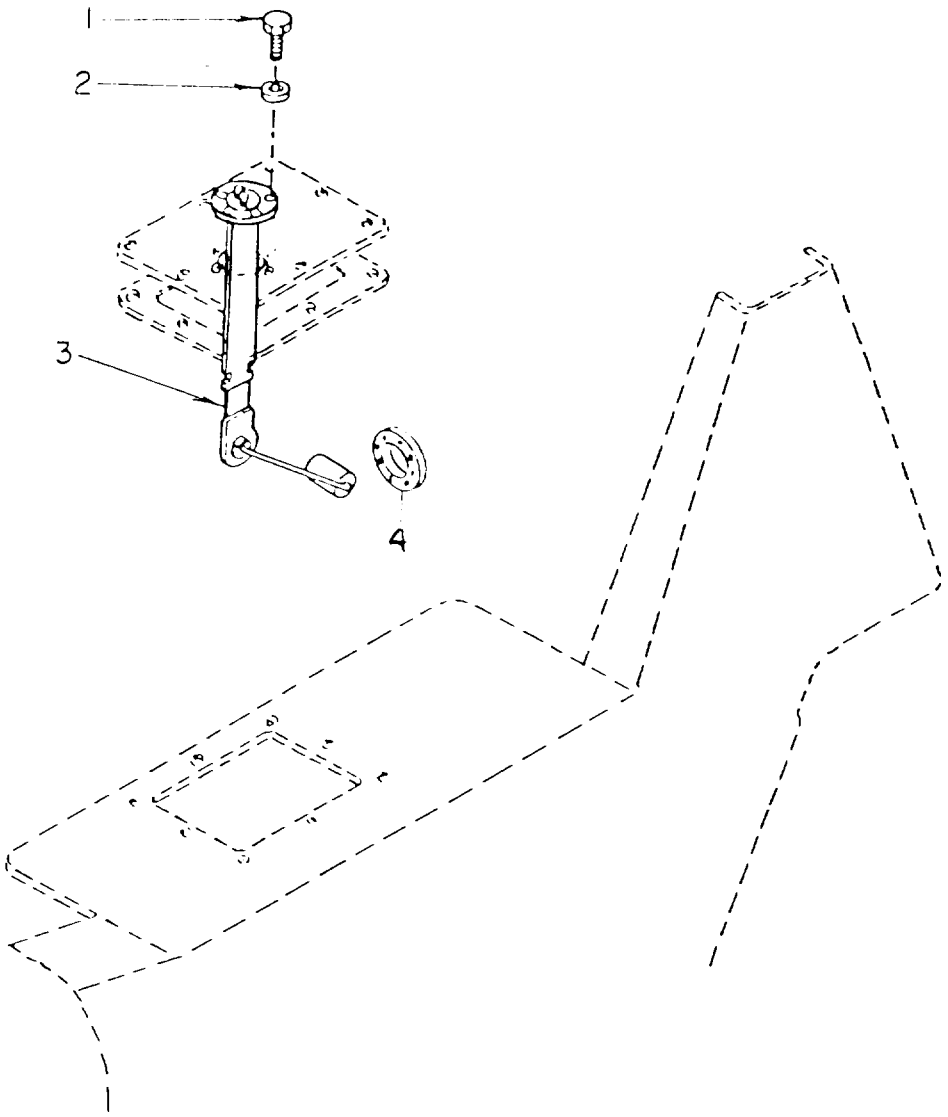
(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0609 LIGHTS	
				FIG. 39. FLOOD LAMP & TAIL LAMP ASSEMBLY	
* 1	PFOZZ	75175	860-2301	HEADLIGHT	1
* 2	PAOZZ	24446	4412	LAMP, INCANDESCENT	1
* 3	PFOZZ	61888	22672-40201	STOP LIGHT-TAILLIGH.	1
4	PAOZZ	08108	1157	LAMP, INCANDESCENT	1
5	PFOZZ	61888	22672-49311	LENS, LIGHT	1
				END OF FIGURE	



TA265170

FIGURE 40. SENDING UNITS

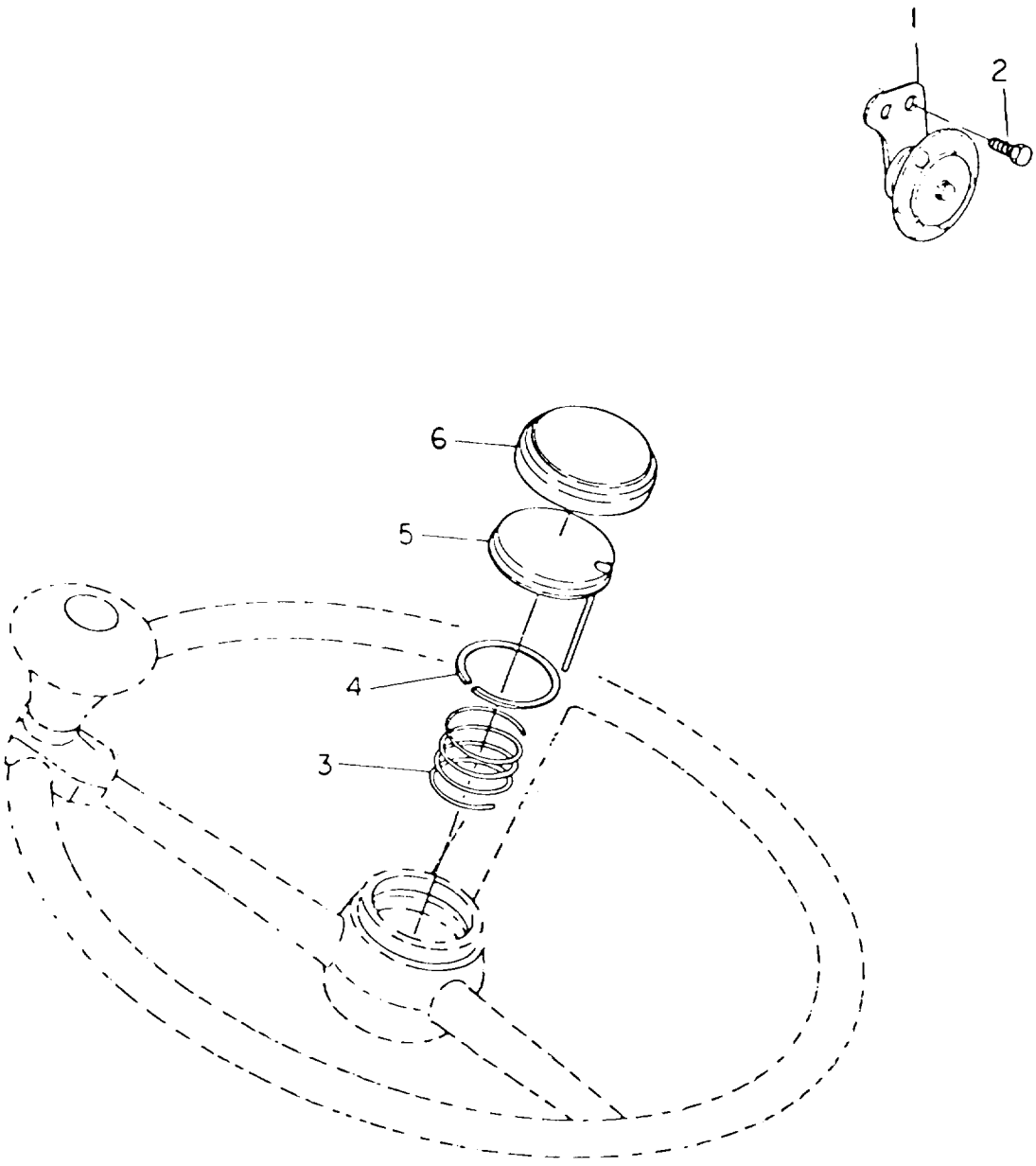
(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0610 SENDING UNITS	
				FIG. 40. SENDING UNITS	
1	PFOZZ	61888	N-25240-89910	SWITCH, PRESSURE	1
2	PFOZZ	61888	N-25251-37700l	NUT, GLAND, SENDING	1
3	PFOZZ	61888	N-250RO8-R9900	SENSOR, TFMPERATURE	1
				END OF FIGURE	



TA265171

FIGURE 41. FUEL GAUGE, SENDING UNIT

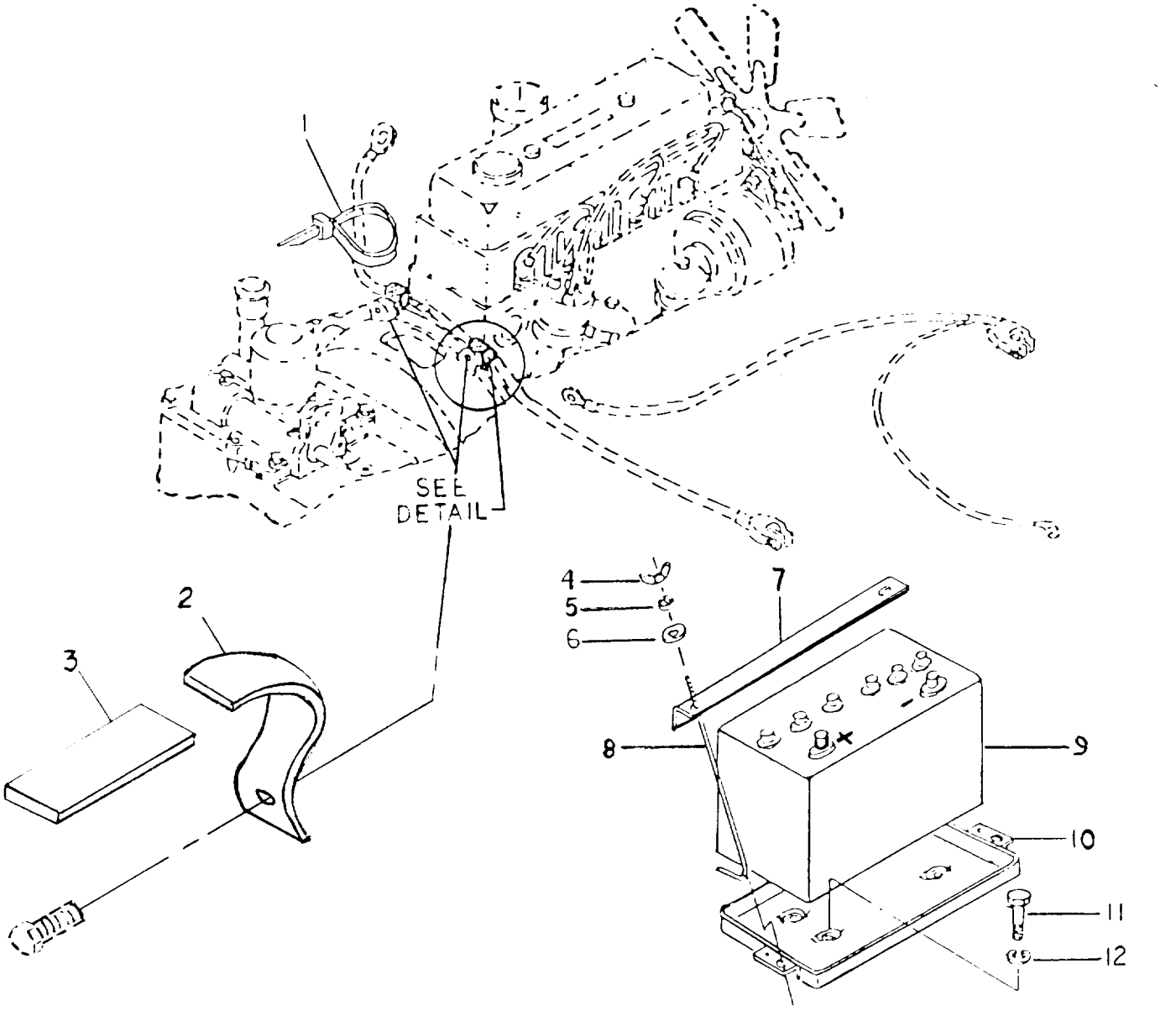
(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0610 SENDING UNITS	
				FIG. 41. FUEL GAGE, SFNDING UNIT	
1	PFOZZ	61888	01100-05012	BOLT, MACHINE	5
2	PFOZZ	61888	02010-00005	WASHER, LOCK	5
3	PFOZZ	61888	23652-23011	GAGE, LIQUID QUANTI	1
4	PFOZZ	61888	23642-20042	GASKET	1
				END OF FIGURE	



TA265172

FIGURE 42. HORN ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0611 HORN FIG. 42. HORN ASSFMBLY	
1	PFOZZ	61888	20712-40273	HORN, ELECTRICAL	1
2	PFOZZ	61888	01100-06010	BOLT, MACHINE	2
3	KFOZZ	61888	24354-12051	SPRING, HORN BUTTON PART OF KIT PIN 24354-19801	1
4	KFOZZ	61888	24354-12041	LOCK, SPRING PART OF KIT P/N 24354-199801.	
5	KFOZZ	61888	24354-12031	C, UP, CONTACT PART OF KIT P/N 24354-19801	1
6	KFOZZ	61888	24354-12021	BUTTON, HCRN PART OF KIT P/N 24’354-19801	1
				END OF FIGURE	

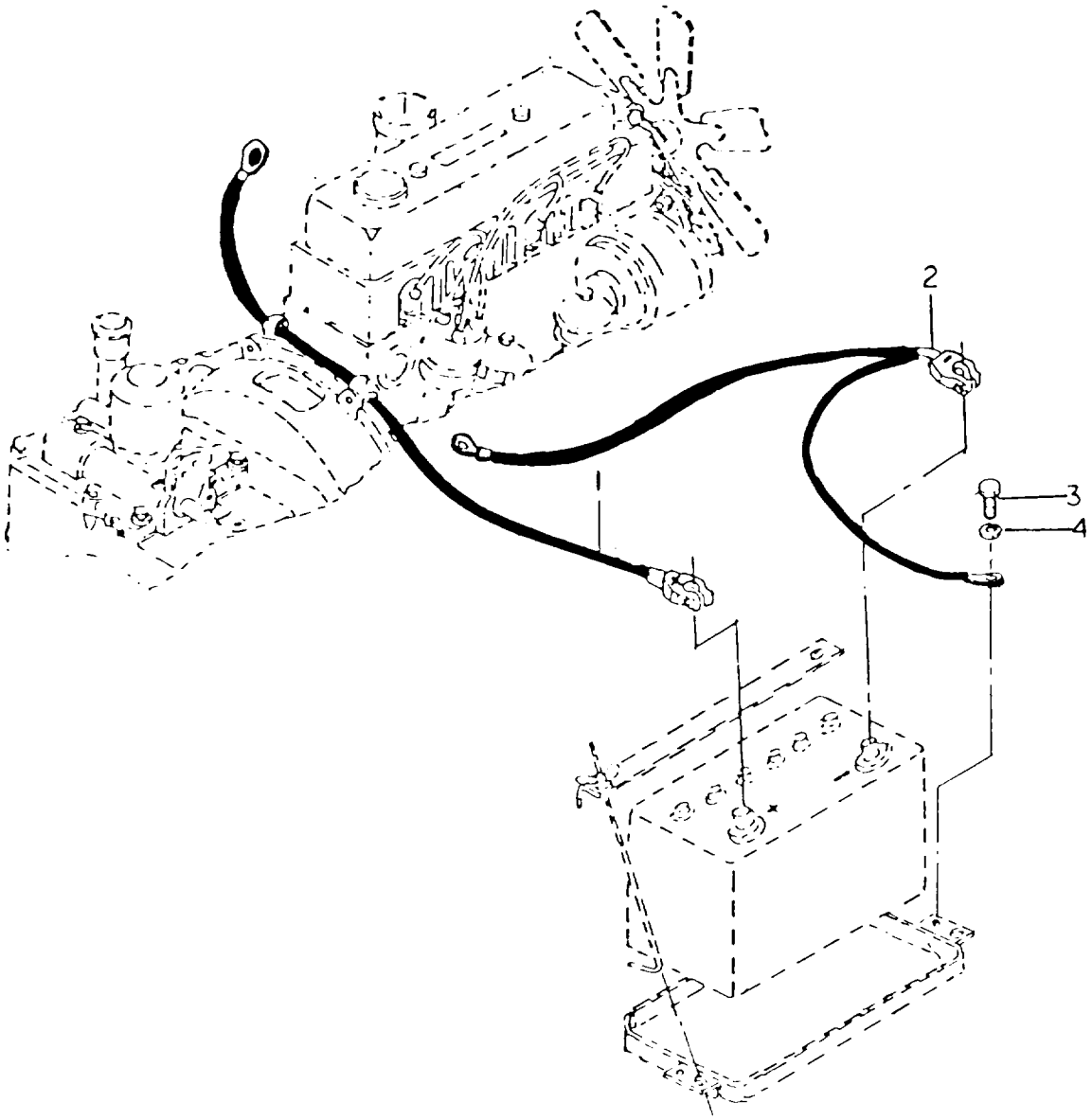


TA265173

FIGURE 43. BATTERY & MOUNTING

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0612 BATTERIES, STORAGE <WET>	
				FIG. 43. BATTERY & MOUNTING	
* 1	PFOZZ	06383	SST2	STRAP, TIEDOWN, ELECT	1
* 2	XDOZZ	61888	23652-42371	CONNECTING LINK, RIG	2
3	PFOZZ	61888	04720-12006	HOSE, NONMETALLIC.	2
4	PFOZZ	61888	01420-00006	NUT BLANK	2
5	PFOZZ	61888	02010-00006	WASHER, LOCK	2
6	PFOZZ	61888	23452-42181	WASHER, FLAT	2
7	PFOZZ	61888	23032-42001	RETAINER, BATTERY	1
8	PAOZZ	61888	23652-42041	BOLT, ECCENTRIC HEA	2
* 9	XDOZA	61888	78247-28201	BATTERY, STORAGE	1
* 10	XDOZZ	61888	23652-43001	TRAY, BATTERY	1
11	PFOZZ	61888	01100-08012	BOLT, MACHINE	2
* 12	PFOZZ	96906	MS35340-45	WASHER, LOCK	2

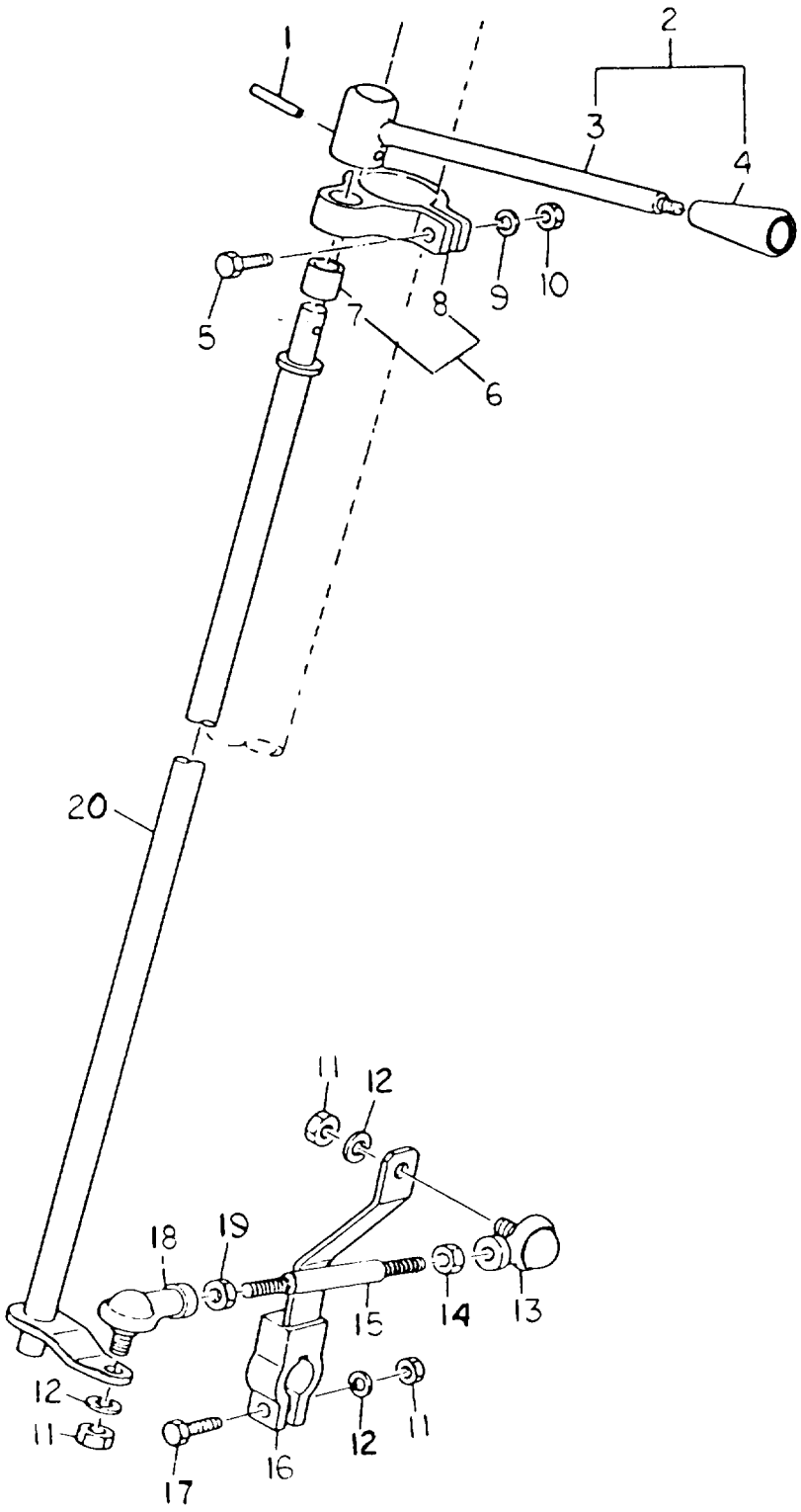
END OF FIGURE



TA265174

FIGURE 44. BATTERY CABLES

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0612 BATTERIFESSTORAGE <WFT>	
				FIG. 44. BATTERY CABLES	
1	PFOZZ	61888	23652-43031	LEAD, STORAGE BATT	1
2	PFOZZ	61888	23652-43041	LEAD, STORAGE BATTE	1
3	PFOZZ	61888	23452-43291	BOLT, MACHINE	1
4	PFOZZ	62983	471061	WASHER, FLAT	1
				END OF FIGURE	



TA265175

FIGURE 45. TRANSMISSION LINKAGE CONTROLS

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 07 TRANSMISSION GROUP 0705 GEAR SHAFT AND CONTROLS FIG. 45 TRANSMISSION LINKAGE CONTROLS	
1	PFFZZ	61888	02270-06030	PIN, SPRING	1
2	AFFFF	61888	24363-90202	CHANGE LEVER ASSY	1
* 3	XDFZZ	61888	24363-92002	LEVER, MANUAL CONTROL	1
4	PFFZZ	61888	10070-00019	GRIP, HANDLE	1
5	PFOZZ	61888	01103-10040	BOLT, MACHINE	1
* 6	XDFZZ	61888	24363-90211	BRACKET, EYE, NONROTA	1
7	PAFZZ	61888	23663-92111	BUSHING, SLEEVE	1
8	XAFZZ	61888	24363-92021	SUPPORT	1
9	PFOZZ	61888	02011-00010	WASHER, LOCK	1
10	PFOZZ	61888	01400-10010	NUT, PLAIN, HEXAGON	1
11	PFOZZ	61888	01400-00008	NUT, PLAIN, HEXAGON , ,	3
12	PFOZZ	96906	MS35340-45	WASHER, LOCK	3
13	PFFZZ	61888	24357-42101	BALL, JOINT, DOUBLE	1
14	PFFZZ	61888	01407-00008	NUT, PLAIN, HEXAGON	1
15	PFFZZ	61888	23663-92091	TIE ROD, TENSIONING	1
* 16	XDFZZ	61888	24243-90101	LINK, TORQUE	1
* 17	XDFZZ	61888	01100-08035	BOLT, MACHINE	1
18	PFFZZ	61888	24357-42091	BALL, JOINT1DOUBLE	1
19	PFFZZ	61888	01402-00008	NUT, PLAIN, HEXAGON	1
* 20	XDFZZ	61888	23663-90252	LEVER, REMOTE CONTRO	1

END OF FIGURE

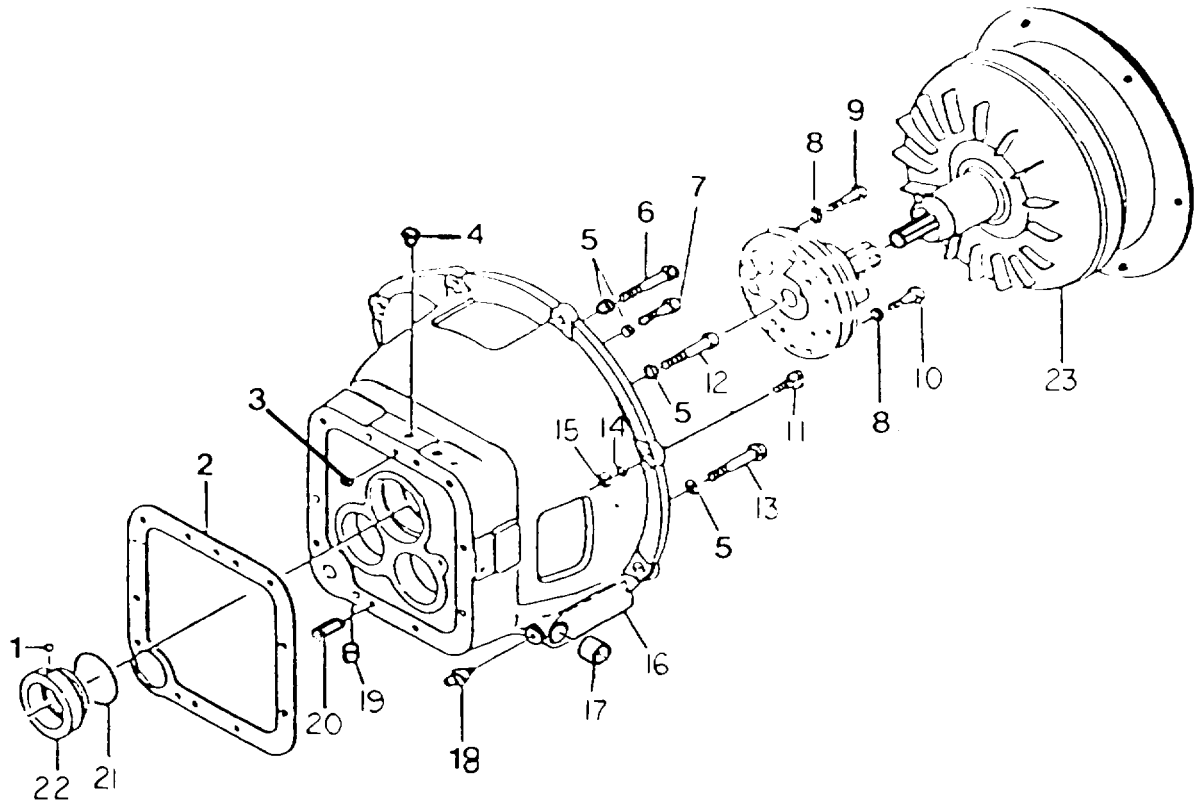


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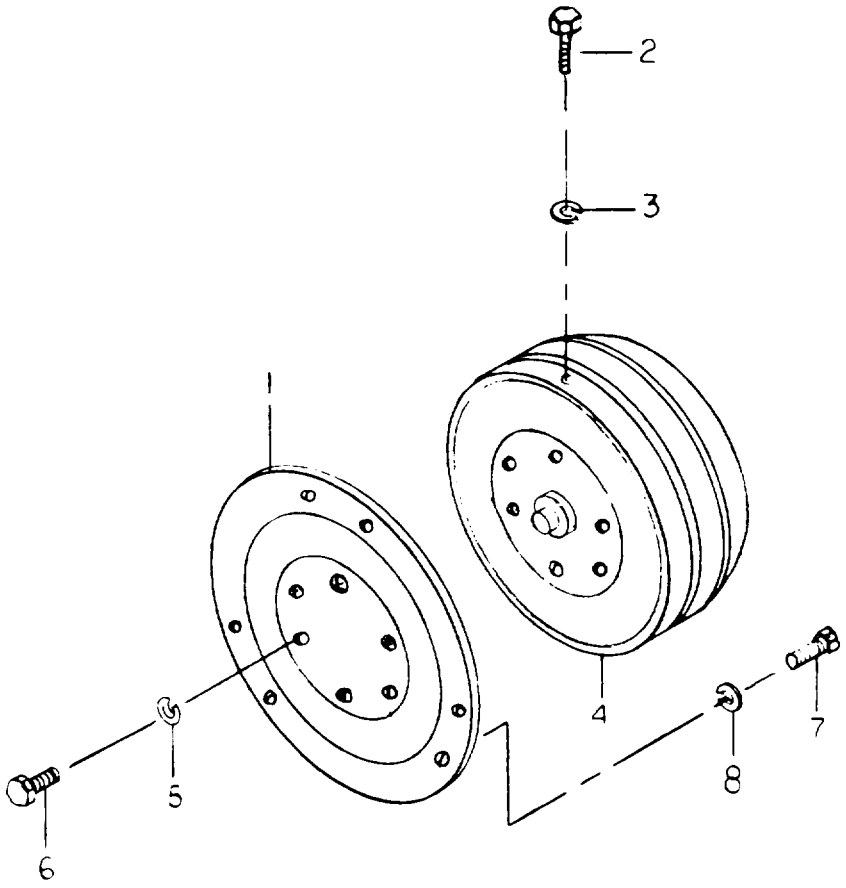
FIGURE 46. TORQUE CONVERTER, BELL HOUSING

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0708 TORQUE CONVERTER FIG. 46 TORQUE CONVERTER, BELL HOUSING	
1	PFFZZ	96906	M19059-2414	BALL, BEARING	1
2	KFFZZ	61888	12163-82022	GASKET, PAR, OF KIT, P/N 12163-898019	1
3	KFFZZ	61888	03300-00110	O-RING PAR, OF KIT, P/N 12163-89801	1
4	PFFZZ	61888	22518-40151	PLUG, PIPE	1
5	PFFZZ	61888	02011-00010	WAHER, LOCK	9
6	PFFZZ	61888	01103-10075	BOL, MACHINE	1
7	PFFZZ	19710	1595893	BOL, HOULDER	4
8	PFFZZ	61888	12163-82561	PACKING, PREFORMED	11
9	PFFZZ	61888	01106-08045	BOLT, MACHINE	2
10	PFFZZ	61888	01106-08040	BOLT, ACHINE	9
11	PFFZZ	61888	01100-10050	BOLT,	8
12	PFFZZ	61888	01103-10050	BOLT, MACHINE.	1
13	PFFZZ	61888	01103-10055	BOLT, MACHINE,	3
14	PAFZZ	61888	02010-00010	WASHER, LOCK	8
15	PAFZZ	61888	01400-00010	NUT, ,	8
16	PFFZZ	61888	12163-82001	HOUSING, MECHANICAL	1
* 17	PFFZZ	61888	AE09910-043	BUSHING, LEEVE	2
18	PFOZZ	61888	04901-00191	FITTING, LUBRICA, ION	2
19	PFFZZ	61888	12163-82541	PLUG, PIPE	2
20	PFFZZ	61888	02212-12020	PIN, STRAIGHT, HEADLE	2
21	KFFZZ	61888	03310-00650	O-RING PAR, OF KI, P/N 12163-89801	1
22	PFFZZ	61888	12163-82071	COVER, FRON, EAL, O	1
23	PFFZZ	61888	12163-80301	TORQUE CONVER, GR.,	1

END OF FIGURE



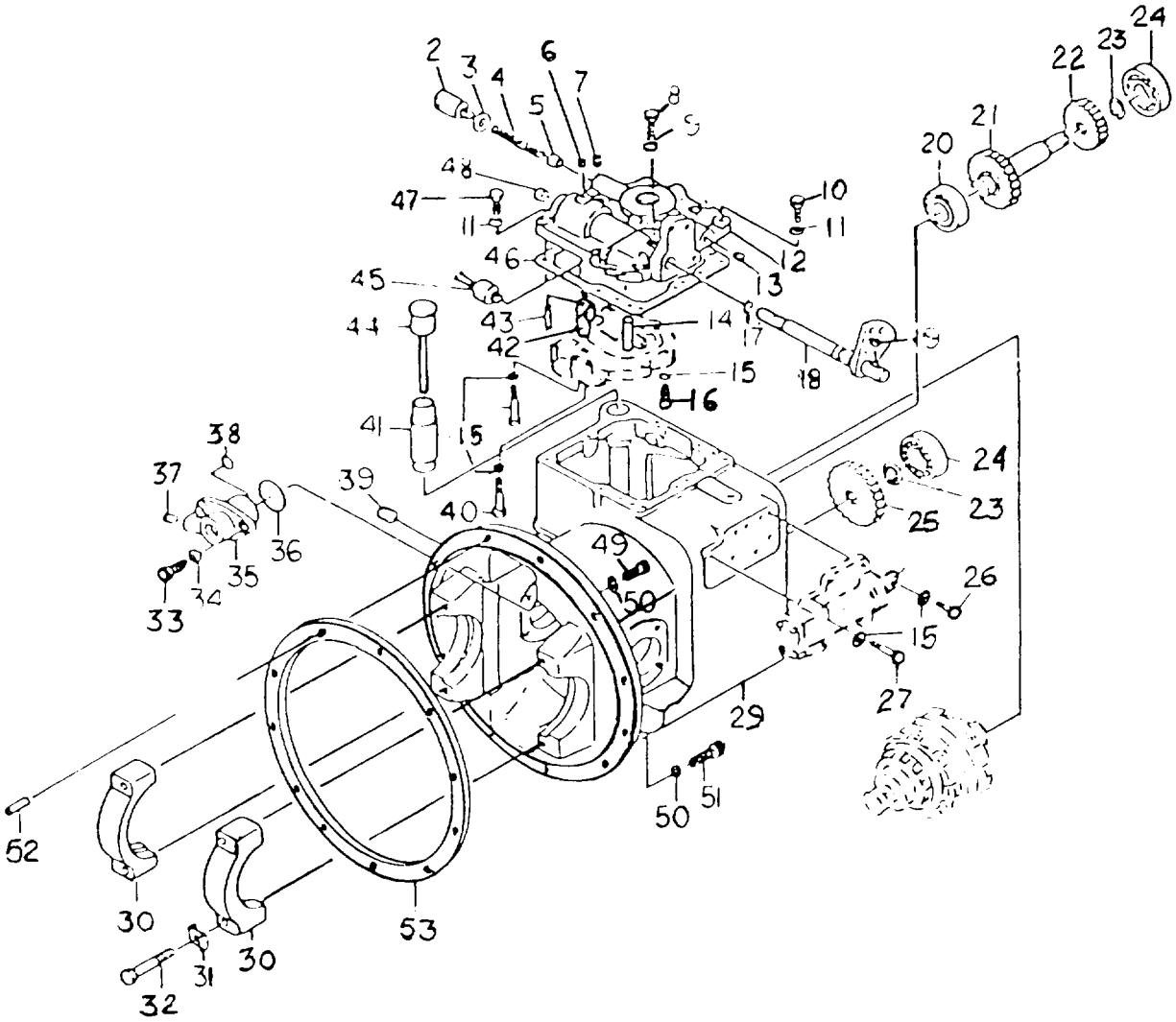
TA265177

FIGURE 47. TORQUE CONVERTER SUB ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0708 TORQUE COVERTER	
				FIG. 47. TORQUE COVERTER SUB ASSEMBLY	
1	PFFZZ	61888	13063-82021	PLATE, RETAINING SHA	1
2	PFFZZ	61888	BK8051400800	SCREW, MACHINE	2
3	PFFZZ	61888	BK6504420000	WASHER, LOCK	2
* 4	PFFZZ	61888	1216380301	TORQUE CONVERTER	1
5	PFFZZ	61888	12163-82631	WASHER, FLAT	6
6	PFFZZ	61888	12163-82621	BOLT, MACHINE	6
7	PFFZZ	61888	01103-08025	BOLT, MACHINE	6
8	PAFZZ	61888	02011-00008	WASHER, LOCK	6
				END OF FIGURE	

29
28 THRU
32

2 thru 48
FIG. 46 1 thru 10,12,13,16 thru 23
FIG. 47 1 thru 6
FIG. 48 1 thru 48
FIG. 49 1 thru 14
FIG. 50 1 thru 16
FIG. 51 1 thru 24
FIG. 52 3 thru 6, 10 thru 16
FIG. 53 1 thru 14
FIG. 55 1 thru 50



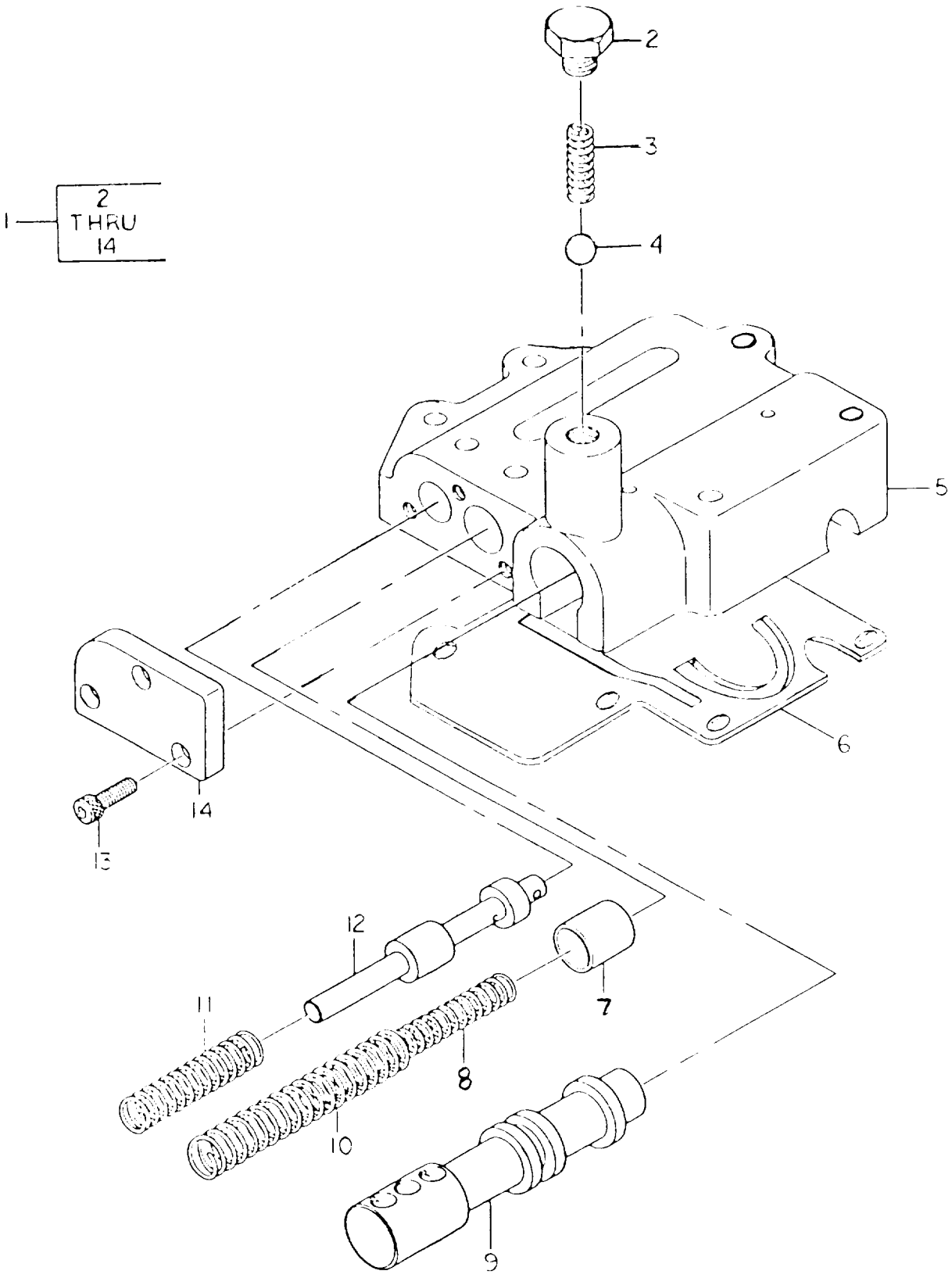
TA265178

FIGURE 48. HYDRAULIC TRANSMISSION ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0710 TRANSMISSION ASSEMBLY, HYDRAULIC	
				FIG. 48 HYDRAULIC TRANSMISSION ASSEMBLY	
1	PFFHH	61888	14442-50002	TRANSMISSION, CROSS-	1
2	PFFZZ	61888	12163-82341	.CAP-PLUG, END SEAL	1
3	KFFZZ	61888	12163-82421	.PACKING, COPPER PART OF KIT P/N 12163-89801	1
4	PFFZZ	61888	12163-82331	.SPRING, HELICAL CO	1
5	PFFZZ	61888	12163-82321	.PLUG, PISTON PIN	1
6	PFFZZ	61888	23870-52871	.PLUG, MACHINE THRE	5
7	PFFZZ	61888	04000-00100	.PLUG, PIPE	1
8	PFFZZ	61888	12163-82291	.BOLT EXTERNALLY RE	1
* 9	PFFZZ	61883	12163-82561	.PACKING, PREFORMED PART OF KIT P/N 12163-89801	1
10	PFFZZ	61888	01100-10035	.BOLT, MACHINE	3
11	PFFZZ	61888	02010-00010	.WASHER, LOCK	8
12	PFFZZ	61888	12163-82241	.HOUSING, VALVE, LINED	1
13	PFHZZ	61888	22518-40151	.PLUG, PIPE	1
14	PFFZZ	96906	MS16562-232	.PIN, SPRING	1
* 15	XDHZZ	61888	02011-00008	.WASHER, LOCK	3
16	PFFZZ	61888	01103-08035	.BOLT, MACHINE	2
17	KFFZZ	61888	03300-00160	.O-RING PART OF KIT P/N 12163-89801	1
18	PFFZZ	61888	12163-80281	.SHAFT, SHOULDERED	1
19	PFFZZ	61888	02360-05019	.KEYVWOODRUFF	1
* 20	PFHZZ	34623	A1007	BEARING, BALL, ANNULA	1
21	PFHZZ	61888	12163-42201	.GEARSHAFT, SPUR	1
22	PFHZZ	61888	12163-42211	.GEAR, SPUR	1
23	PFHZZ	61888	AE-481J2400	.RING, RETAINING	2
* 24	XDHZZ	52676	6207J	.BEARING, BALL, ANNULA	1
25	PFHZZ	61888	12163-42231	.GEAR, SPUR	1
26	PFFZZ	61888	01103-08025	.BOLT, MACHINE	2
27	PFFZZ	61888	01103-08050	.BOLT, MACHINE	5
28	PFHZZ	61888	14463-80262	.HOUSING, MECHANICAL	1
29	XAHZZ	61888	14463-82012	..CASE, TRANSMISSION	1
30	XAHZZ	61888	14453-22031	..CAP, BEARING	2
31	KFHZZ	61888	14453-52111	..PLATE, LOCK PART OF KIT P/N 12163-89801	4
32	PFHZZ	61888	15413-22021	..BOLT, SHOULDER	4
33	PFHZZ	61888	01103-08020	.BOLT, MACHINE	3
* 34	XDFZZ	61888	02011-00008	.WASHER, LOCK	11
35	PFHZZ	61888	12163-82111	.RETAINER, PACKING	1
36	KFHZZ	61888	03310-00450	.O-RING PART OF KIT P/N 12163-89801	1
37	PFFZZ	61888	22518-40151	.PLUG, PIPE	2
* 38	PFHZZ	61888	03300-00120	.PACKING, PREFORMED PART OF KIT P/N 12163-89801	1
39	PFFZZ	61888	12163-82541	.PLUG, PIPE	2
40	PFFZZ	61888	01103-08055	.BOLT, MACHINE	2
* 41	PFFZZ	61888	12163-82221	.TUBE, METALLIC	1
42	PFFZZ	61888	12163-82251	.LEVER, REMOTE CONTRO	1

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
43	PFFZZ	61888	02270-06032	.PIN, SPRING	1
44	PFOZZ	61888	12163-82232	.CAP, FILLER OPENING	1
45	PFFZZ	61888	12163-82281	.SWITCH, SAFETY NETU	1
46	KFFZZ	61888	12163-82361	.GASKET PART OF KIT P/N 12163-89801	1
47	PFFZZ	61888	01100-10030	.BOLT1MACHINE	5
48	PFFZZ	61888	12163-82431	.CAP, PROTECTIVE, DU	1
49	PFFZZ	61888	01106-12055	BOLT, MACHINE	1
50	PFFZZ	61888	02011-00012	WASHER, LOCK	12
51	PFFZZ	61888	01106-12040	BOLT, MACHINE	11
* 52	XDFZZ	61888	AE-661A1020	PIN, STRAIGHT, HEADLE	1
53	PFFZZ	61888	24452-52001	PACKING, PREFORMED	1

END OF FIGURE



TA265179

FIGURE 49. CONTROL VALVE ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0710 TRANSMISSION ASSEMBLY, HYDRAULIC	
				FIG. 49. CONTROL VALVE ASSEMBLY	
1	PFFHH	61888	12163-80241	VALVE, LINEAR, DIRECT	1
2	PFFZZ	61888	BK7133021000	.PLUG, MACHINE THRE	1
3	PFFZZ	61888	BK7134011001	.SPRING, HELICAL, EX	1
* 4	PFFZZ	61888	0319000013	.BALL, CHECK	1
5	XAFZZ	61888	BKT134001000	.BODY, VALVE	1
6	PFFZZ	61888	BK7134013000	.GASKET.T.	1
7	XAFZZ	61888	BK7134003000	.PISTON	1
8	PFFZZ	61888	BK7134004000	.SPRING, HELICAL1EX	1
9	XAFZZ	61888	8K7134002000	.VALVE, SELECTOR	1
10	PFFZZ	61888	BK7134005000	.SPRING, HELICAL, EX	1
11	PFFZZ	61888	BK7134007000	.SPRING, HELICAL, EX	1
12	XAFZZ	61888	BK7134006000	.SPOOL	1
13	PFFZZ	61888	BK8054071400	.BOLT, MACHINE	3
14	PFFZZ	61888	BK7134008000	.COVER, ACCESS	1
				END OF FIGURE	

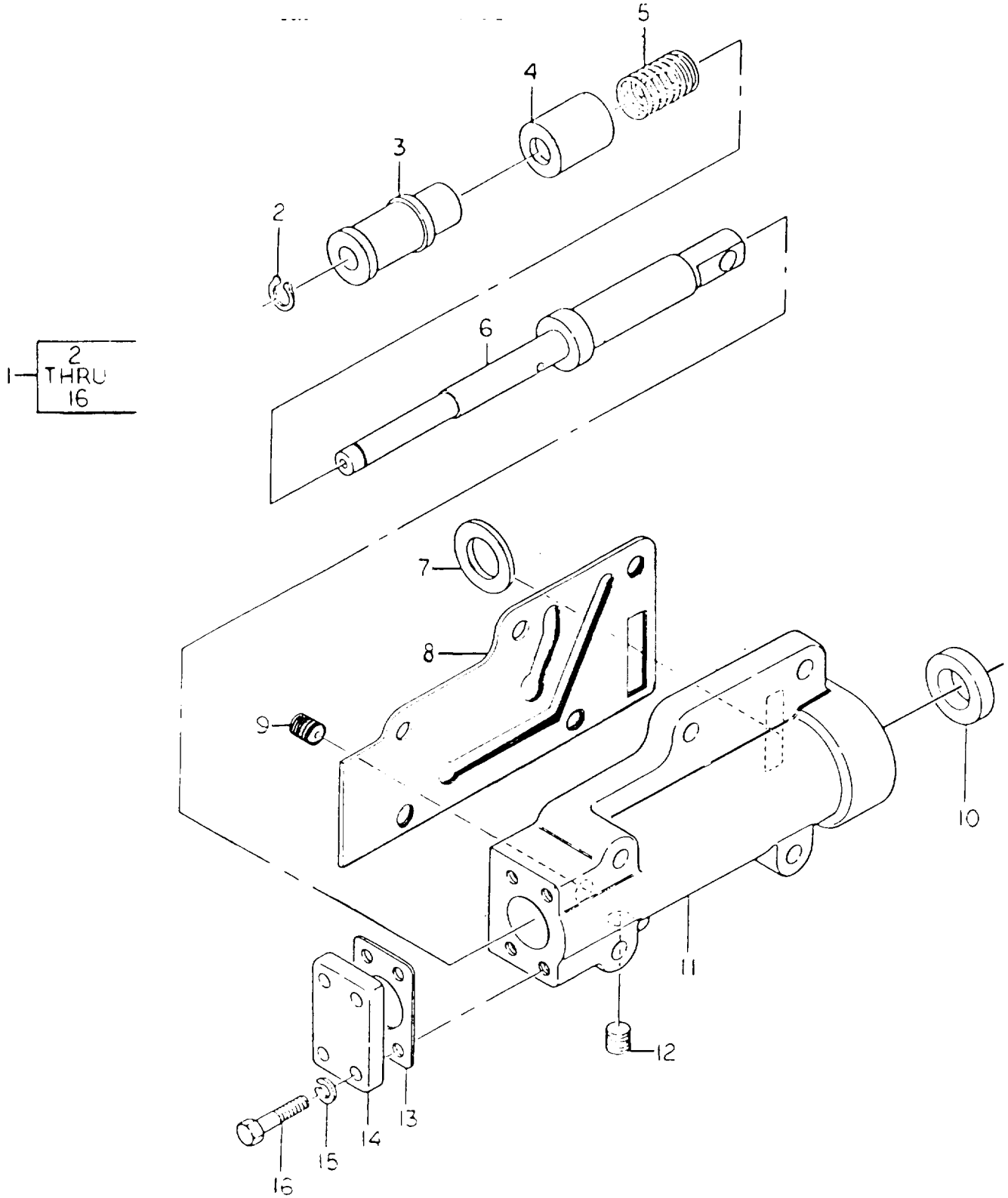


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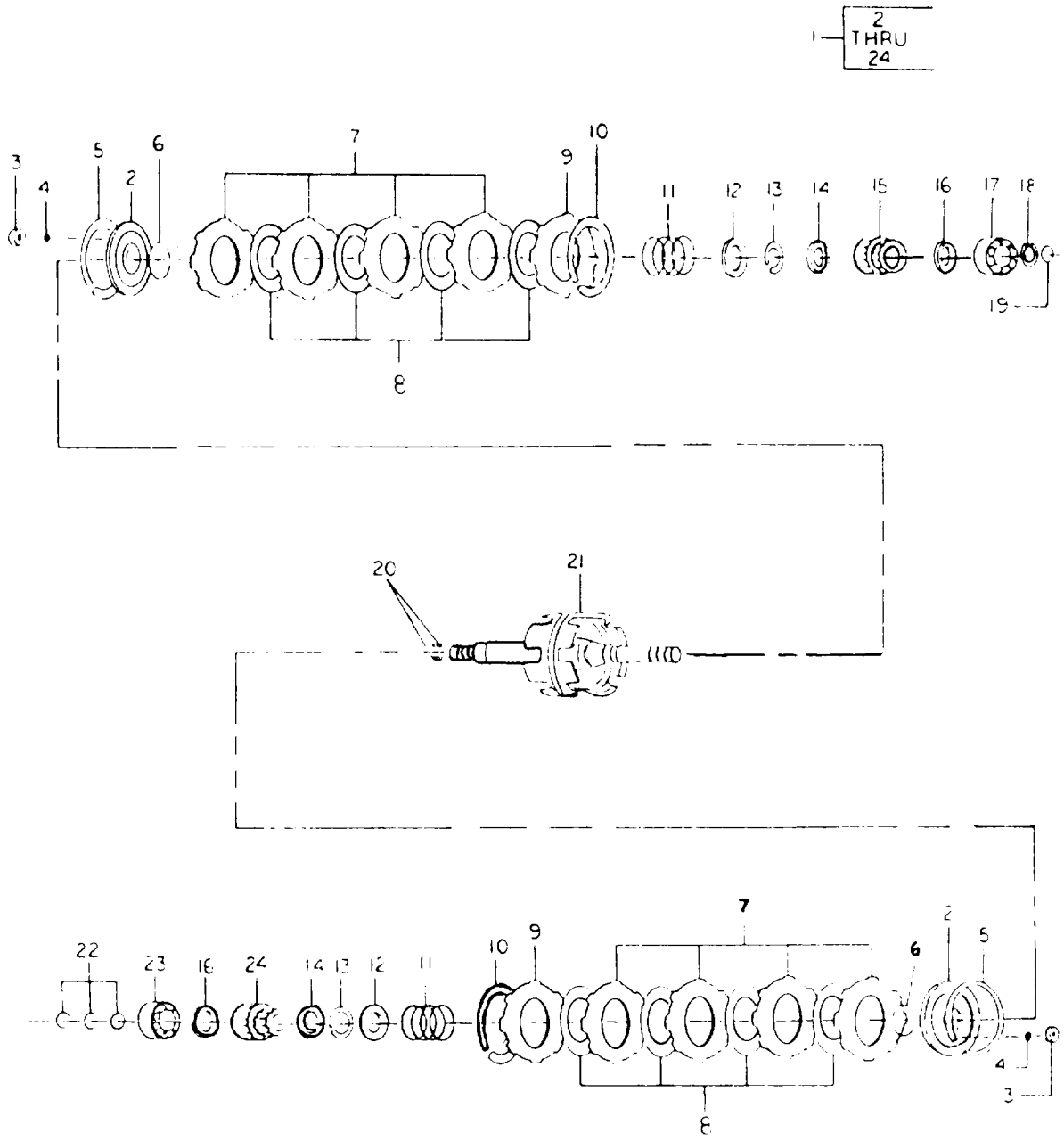
FIGURE 50. INCHING VALVE ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0710 TRANSMISSION ASSEMBLY, HYDRAULIC	
				FIG. 50. INCHING VALVE ASSEMBLY	
1	PFFHH	61888	12163-80251	.CYLINDER ASSEMBLY, A	1
* 2	KFFZZ	61888	BK8131010350	.RING, SNAP PART OF KIT P/N 12163-89851	1
3	XAFZZ	61888	BK7135007000	.SPOOL	1
4	XAFZZ	61888	BK7105038000	.PISTON	1
5	PFFZZ	61888	BK-7105039001	.SPRING, HELICAL, EXTE	1
6	XAFZZ	61888	BK7135002000	.SPOOL	1
* 7	XDFZZ	61888	BK7135003000	.COLLAR, SHAFT	1
* 8	KFFZZ	61888	BK7135015000	.GASKET PART OF KIT P/N 12163-89851	1
* 9	PFFZZ	61888	BK7135013000	.SEAT, VALVE	1
* 10	KFFZZ	61888	BKB101607010	.SEAL, OIL PART OF KIT P/N 12163-89851	1
11	XAFHH	61888	BK7135001000	.BODY, VALVE	1
12	PFFZZ	61888	BK8059940700	.PLUG, MACHINE THREAD	1
* 13	KFFZZ	61888	BK7135009000	.GASKET PART OF KIT P/N 12163-89851	1
* 14	XDFZZ	61888	BK7135010000	.COVER, ACCESS	1
* 15	PFFZZ	61080	50002700	.WASHER, LOCK.	4
16	PFFZZ	61888	BK8051072000	.BOLT, MACHINE	4

END OF FIGURE

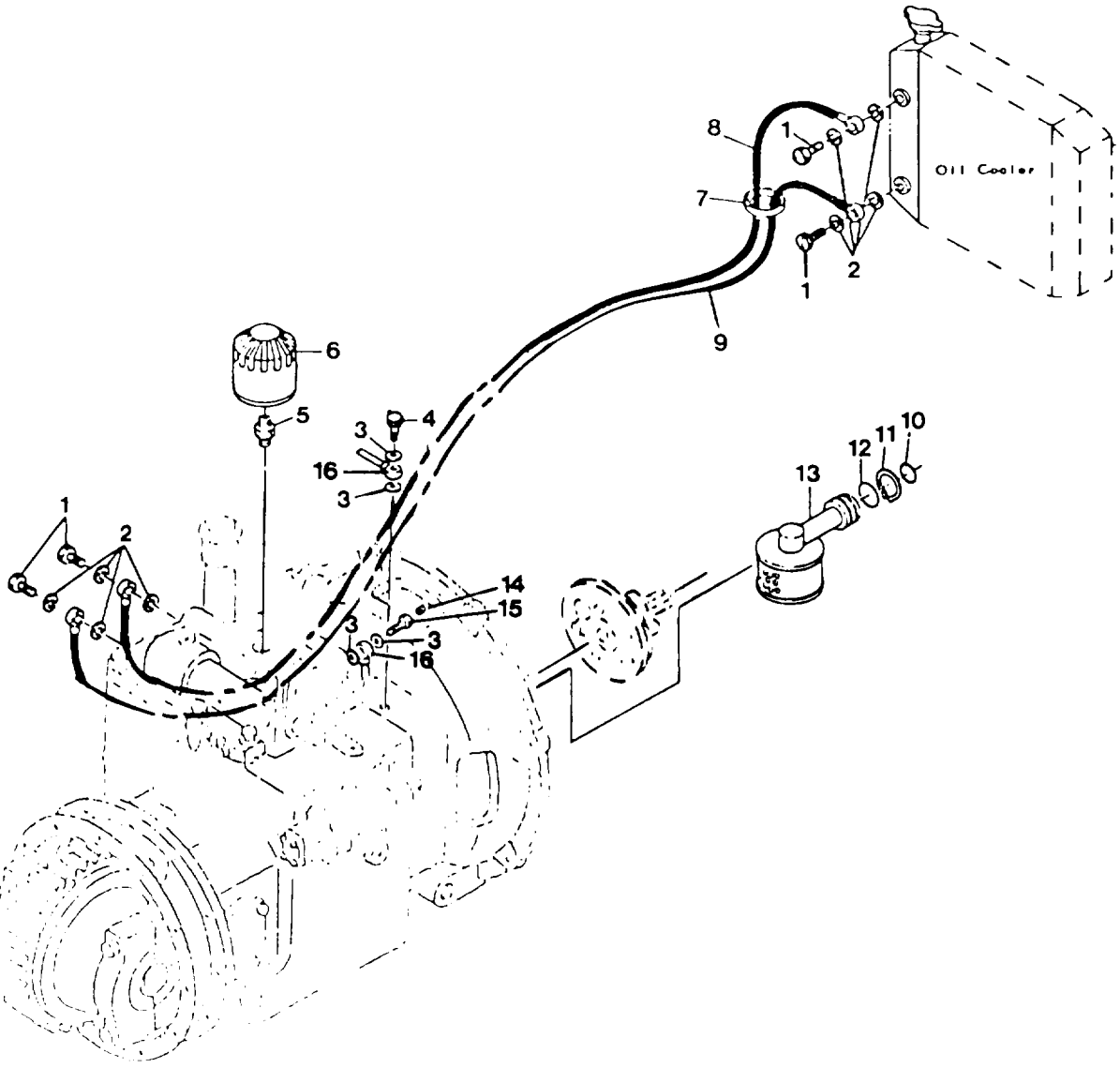


TA265181

FIGURE 51. HYDRAULIC CLUTCH ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0710 TRANSMISSION ASSEMBLY, HYDRAULIC	
				FIG. 51. HYDRAULIC CLUTCH ASSEMBLY	
1	PFHHH	61888	12163-80231	CLUTCH ASSEMBLY, FRI	1
2	PFHZZ	61888	BK7089002000	.PISTON, HYDRAULIC H	2
3	XAHZZ	61888	BK7065021000	..PLUG	2
4	XAHZZ	61888	BK7753033000	..BALL	2
* 5	KFHZZ	61888	BK7089004000	.RING, SEAL PART OF KIT P/N 12163-89831	2
* 6	KFHZZ	61888	8K7031018000	.RING, SEAL PART OF KIT P/N 12163-898318	2
* 7	PAHZZ	61888	BK-708909000	.DISK, CLUTCH	8
8	PAHZZ	61888	BK7501024000	.DISK, CLUTCH	8
9	PFHZZ	61888	BK7089010000	.COVER ASSEMBLY, CLUT	2
10	PFHZZ	61888	BK7089011000	.RING, RETAINING,	2
11	PFHZZ	61888	BK7089005001	.SPRING, HELICAL, EX	2
* 12	PFHZZ	61888	BK7089006000	.GUIDE, SPRING	2
* 13	KFHZZ	61888	BK8131040060	.RING, SNAP PART OF KIT P/N 12163-89831	2
14	PFHZZ	61888	BK7089014000	.BEARING, WASHER,	2
* 15	PFHZZ	61888	BK7089013001	.GEAR CLUSTER	1
16	PFHZZ	61888	BK7089015000	..BEARING, WASHER, TH	2
17	PFHZZ	61888	8K8113301610	.BEARING, ROLLER, TH	1
* 18	KFHZZ	61888	BK8131030100	.RING, SNAP PART OF KIT P/N 12163-89831	1
* 19	KFHZZ	61888	BK7050003000	.RING, SEAL PART OF KIT P/N 12163-89831	1
20	PFHZZ	61888	BK8059090800	.SETSCREW	2
* 21	PFHZZ	61888	BK7089001003	.SHAFT, SHOULDERED	1
* 22	KFHZZ	61888	8K7089020000	.RING, SEAL PART OF KIT P/N 12163-89831	3
23	PFHZZ	61888	BK8111301640	.BEARINGIBALL, THRU	1
* 24	PFHZZ	61888	BK7089012001	.GEAR CLUSTER	1

END OF FIGURE

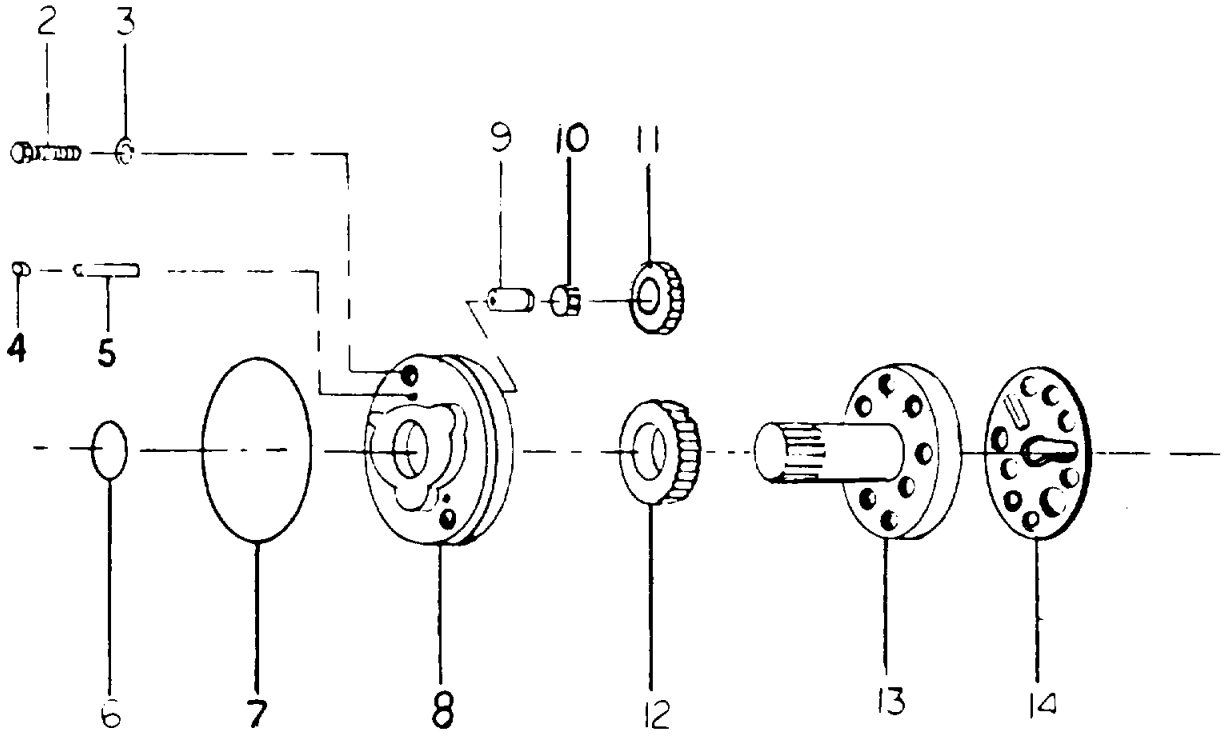


TA265182

FIGURE 52. STRAINER, FILTERS, HOSES, FITTINGS

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0721 COOLERS, PUMP, MOTOR	
					FIG.52 STRAINERS, FILTERS, HOSES, FITTINGS	
*	1	PFHZZ	61888	AE-09490-107	BOLT, FLUID PASSAGE	4
	2	PFHZZ	61888	23467-82041	PACKING WITH RETAIN	8
	3	KFHZZ	61888	12163-82391	PACKING, COPPER PART OF KIT P/N 12163..... -89801	4
	4	PFHZZ	61888	12163-82441	BOLT, FLUID PASSAGE	1
	5	PFHZZ	61888	12163-82311	NIPPLE, PIPE	1
	6	PAHZZ	61888	12163-82301	FILTER ELEMENT, FL.....	1
	7	PFFZZ	61888	27132-40171	STRAP, TIEDOWN,ELECT	2
	8	PFHZZ	61888	23047-82011	HOSE ASSEMBLY,NON.....	1
	9	PFHZZ	61888	23047-82001	HOSE ASSEMBLY, NON.....	1
	10	KFHZZ	61888	03300-10220	O-RING PART OF KIT P/N 12163-89801.....	1
	11	PFHZZ	61888	02100-00035	RING,RETAINING , ,.....	1
*	12	PFHZZ	61888	03310-00300	PACKING, PREFORMED PART OF KIT P/N..... 12163-89801	1
	13	PFHZZ	61888	12163-82531	PIPE, BENT, METAL.....	1
	14	PFHZZ	61888	23870-52871	PLUG,MACHINE THRE	1
	15	PFHZZ	61888	12163-82611	BOLT,FLUID PASSAGE	1
	16	PFHZZ	61888	12163-82371	TUBE ASSEMBLY, META	1

END OF FIGURE

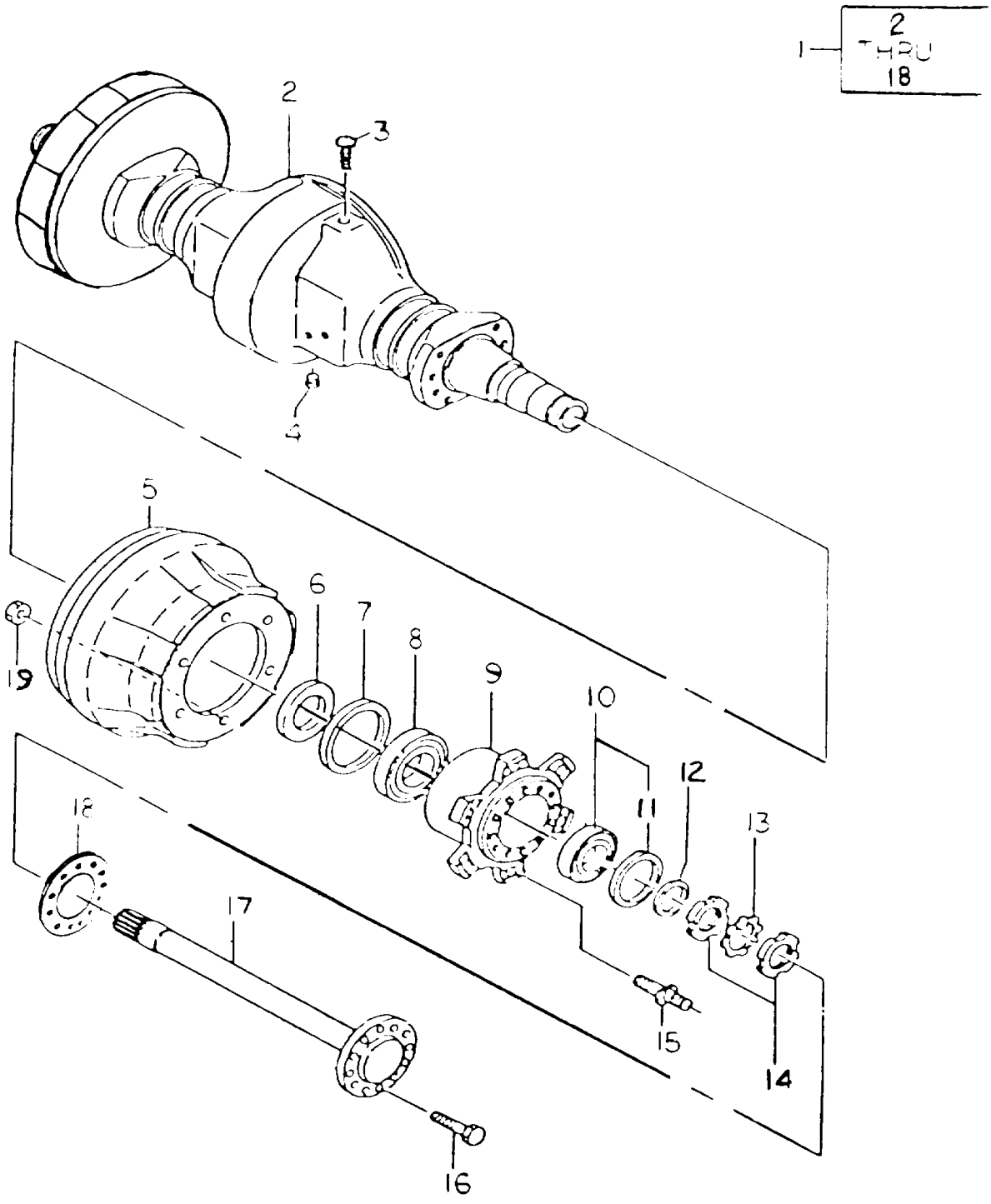


TA265183

FIGURE 53. CHARGING PUMP ASSEMBLY

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0721 COOLERST PUMP, MOTOR FIG.53 CHARGING PUMP ASSEMBLY	
	1	PFHHH	1888	12163-80221	CHARGING PUMP ASSEM.....	1
	2	PFHZZ	61888	BK8052092530	.BOLT,MACHINE	2
	3	PFHZZ	61888	BK-K700300813	.GASKET.....	2
	4	PFHZZ	61888	BK7119041000	.PLUG, MACHINE THR	2
	5	PFHZZ	61888	8K1025166000	.PINISTRAIGHT, HE.....	2
*	6	PFHZZ	61888	BK8105009030	.SEAL,OIL PART OF KIT P/N 12163-89821.....	1
*	7	KFHZZ	61888	BK7304008000	.O-RING PART OF KIT P/N 12163-89821.....	1
	8	XAHZZ	61888	BK7304001000	.CASING.....	1
	9	PFHZZ	61888	BK7304005000	.SHAFT,STRAIGHT	1
	10	KFHZZ	61888	BK8112151310	.BEARING,NEEDLE PART OF KIT P/N 12163-89821.....	1
	11	XAHZZ	61888	BK7304003000	.GEAR,DRIVEN.....	1
	12	XAHZZ	61888	BK7304002000	.GEAR,DRIVE	1
	13	XAHZZ	61888	BK7304006000	.SUPPORT, STATOR	1
*	14	KFHZZ	61888	BK7304012000	.GASKET PART OF KIT P/N 12163-89821.....	1

END OF FIGURE



TA265184

FIGURE 54. FRONT AXLE HOUSING ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 10 FRONT AXLE	
				GROUP 1000 FRONT AXLE ASSFMBLY	
				FIG.54 FRONT AXLE HOUSING ASSEMBLY	
1	AHFHH	61888	99999-01000	FRONT AXLF ASSEMBLY.....	1
2	PFFZZ	61888	24453-02113	.HOUSING, MECHANICAL.....	1
3	PFOZZ	61888	22253-02061	.PLUG, PROTECTIVE	1
4	PFOZZ	61888	22193-03001	.PLUG, PIPE	3
5	PFFZZ	61888	24453-02131	.DRUM BRAKE	2
6	PFFZZ	61888	24453-02121	.RETAINER, OIL SEAL.....	2
7	PFFZZ	61888	23653-02001	.SEAL, PLAIN	2
8	PFFZZ	61888	03071-30214	.BEARING, ROLLER,TAP.,.....	2
9	PFFZZ	61888	24453-02031	HUB, BODY.	2
10	PFFZZ	61888	23453-02071	.BEARING, ROLLER, TAP	2
11	PFFZZ	61888	23453-02131	.SEAL, PLAIN.	2
12	PFFZZ	61888	23453-02091	.WASHER, FLAT.....	2
13	PFFZZ	61888	03192-10012	.WASHER, KEYWAY	2
14	PFFZZ	61888	03192-00012	.LOCKNUT, BEARING.....	4
15	PFFZZ	61888	25303-02102	.STUD, SHOULDERED	12
16	PFFZZ	61888	24453-02061	.SCREW, CAP, HEXAGON H.....	24
17	PFFZZ	61888	24453-02021	.SHAFT, AXLE	2
18	PFFZZ	61888	24453-02101	.GASKET.....	2
19	PFFZZ	61888	01400-10020	.NUT, PLAIN, HEX.....	12

END OF FIGURE

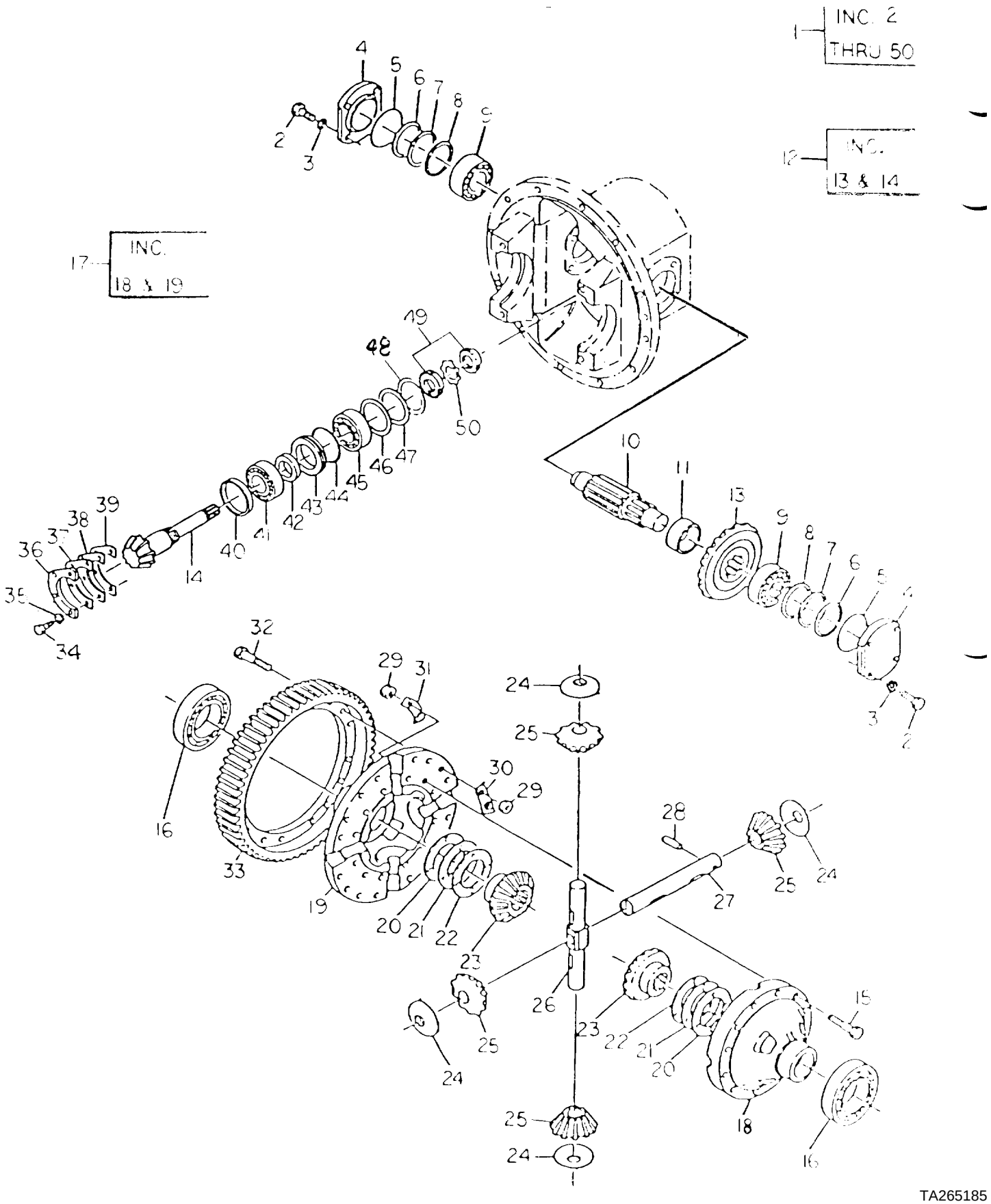


FIGURE 55. DIFFERENTIAL ASSEMBLY

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 1002 DIFFERENTIAL FIG.55 DIFFERENTIAL ASSEMBLY	
	1	AHHHH	61888	99999-01001	DIFFERENTIAL ASSY	1
	2	PFHZZ	61888	01100-10025	.BOLT, MACHINE	8
	3	PFHZZ	61888	02010-00010	.WASHER, LOCK	8
	4	PFHZZ	61888	12003-22051	.CAP,PILLOW,BLOC	2
	5	KFHZZ	61888	03310-00700	.O-RING PART OF KIT P/N 12163-89801	2
	6	KFHZZ	61888	15413-22101	.SHIM PART OF KIT P/N 12163-89801	2
	7	KFHZZ	61888	15413-22091	.SHIM PART OF KIT P/N 12163-89801	4
	8	KFHZZ	61888	15413-22081	.SHIM PART OF KIT P/N 12163-89801	2
	9	PFHZZ	61888	12003-43011	.BEARING,ROLLER, TA	2
	10	PFHZZ	61888	14453-22011	.SHAFT, SHOULDERED	1
	11	PFHZZ	61888	12003-22041	.SPACER, STEPPED	1
	12	PFHZZ	61888	14463-42601	.GEAR CLUSTER BEVEL	1
	13	XAHZZ	61888	14453-22021	..GEAR, SPIRAL BEVEL	1
	14	XAHZZ	61888	14463-42001	..SHAFT	1
	15	PFHZZ	61888	14453-52041	.BOLT, CLOSE TOLERANC	12
*	16	PFHZZ	61888	03000-06213	.BEARING, BALL,ANNULA	2
	17	PFHZZ	61888	14453-59801	.SPIDER, DIFF	1
	18	XAHZZ	61888	14453-52032	..CASE,CROSS LH	1
	19	XAHZZ	61888	14453-52022	..CASE,CROSS RH	1
	20	PFHZZ	61888	14453-52081	.SPACER, PLATE	2
	21	PFHLZ	61888	14453-52071	.WASHER, FLAT	2
	22	PFHZZ	61888	16113-52141	.WASHER, FLAT	2
	23	PFHZZ	61888	14453-52002	.GEAR, BEVEL	2
	24	XDHZZ	61888	16113-52121	.WASHER, SPRING TEN,	4
	25	PFHZZ	61888	16113-52112	.GEAR, BEVEL	4
*	26	XDHZZ	61888	14453-52091	.SHAFT, SHOULDERED	1
*	27	XDHZZ	61888	14453-52101	.SHAFT,STRAIGHT	1
	28	PFHZZ	61888	02212-06030	.PIN, STRAIGHT, HDLESS	1
	29	PFHZZ	61888	01400-10010	.NUT, PLAIN, HEXAGON	28
	30	KFHZZ	61888	10113-50141	.PLATE, LOCK PART OF KIT P/N 12163-89801	6
	31	PFHZZ	61888	14453-52061	.BRAKET ANGLE	6
	32	PFHZZ	61888	14453-52051	.BOLT, SELF-LOCKING	16
	33	PFHZZ	61888	14453-52011	.GEAR, HELICAL	1
*	34	XDHZZ	61888	01103-08020	.BOLT, MACHINE	4
*	35	XDHZZ	61888	02011-00008	.WASHER, LOCK	4
	36	PFHZZ	61888	12163-82151	.PLATE,RETAINING	1
	37	PFHZZ	61888	12163-82571	.SHIM	V
	38	PFHZZ	61888	12163-82581	.SHIM	V
	39	PFHZZ	61888	12163-82591	.SHIM	V
*	40	XDHZZ	61888	12163-82191	.COLLAR, SHAFT	1
	41	PFHZZ	61888	12003-43031	.BEARING, ROLLER, TA	1
	42	KFHZZ	61888	12163-82131	.SEAL,OIL PART OF KIT P/N 12163-89801	1
	43	PFHZZ	61888	12163-82121	.RETAINER, OIL SEAL	1
	44	KFHZZ	61888	03310-00750	.O-RING PART OF KIT P/N 12163-89801	1
	45	PFHZZ	61888	12003-43021	.BEARING,ROLLER,TA	1
	46	KFHZZ	61888	12163-82501	.SHIM PART OF KIT P/N 12163-89801	V

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
47	KFHZZ	61888	12163-82511	.SHIM PART OF KIT P/N 12163-89801..... V	
48	KFHZZ	61888	12163-82521	.SHIM PART OF KIT P/N 12163-89801..... V	
49	PFHZZ	61888	12163-82141	.WASHER,KEY	2
50	PFHZZ	61888	03192-10007	.BEARING, WASHER, TH	1

END OF FIGURE

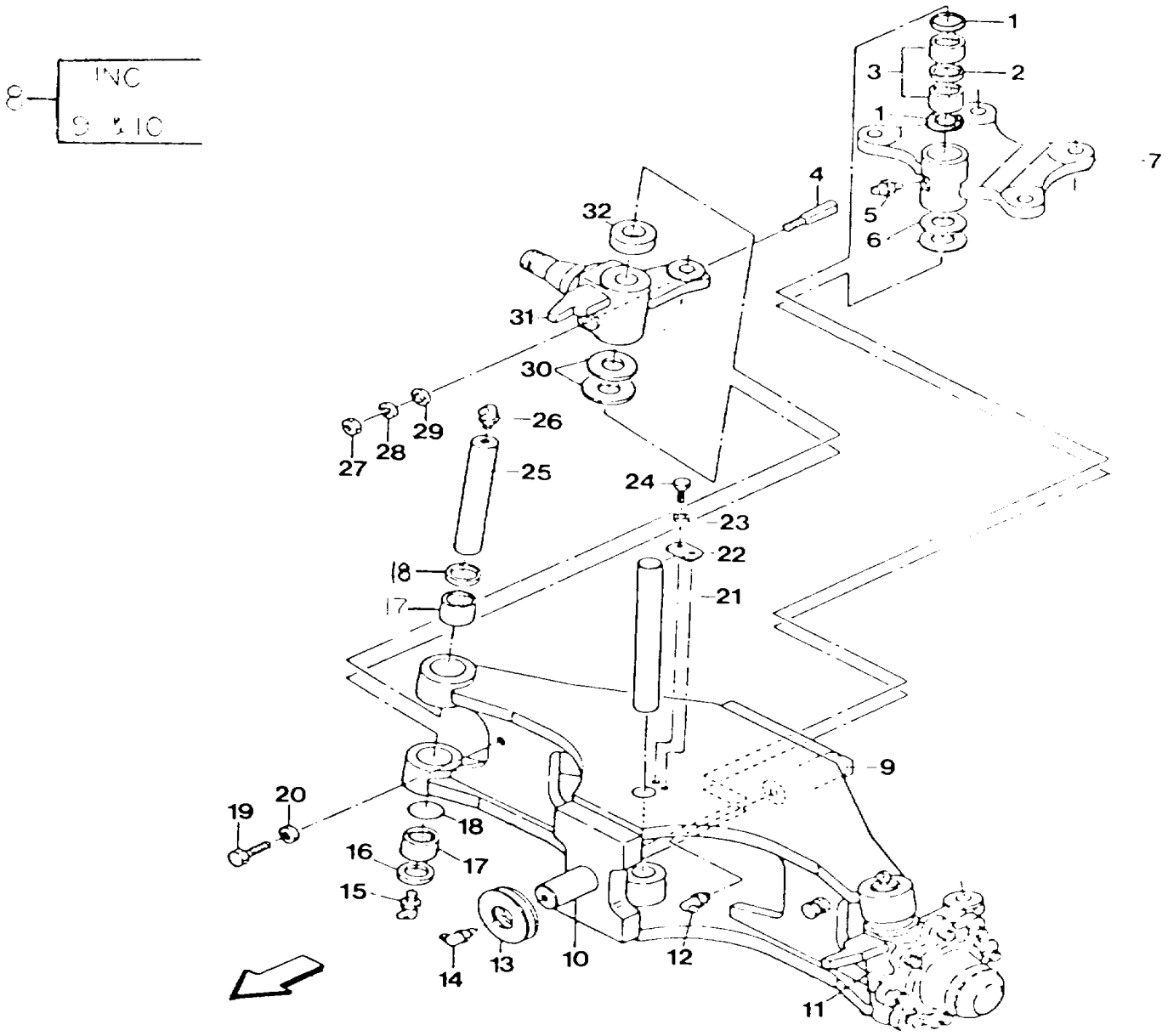


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FIGURE 56. REAR AXLE ASSEMBLY

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 11 REAR AXLE ASSEMBLY	
					GROUP 1104 STEERING MECHANISM	
					FIG.56 REAR AXLE ASSEMBLY	
*	1	KFFZZ	61888	23654-32081	OIL SEAL PART OF KIT P/N 24454-39802	4
	2	KFFZZ	61888	24454-32391	SPACER PART OF KIT P/N 24454-39811,	1
*	3	KFFZZ	61888	03146-13201	NEEDLE BEARING PART OF KIT P/N 24454 -398028	4
*	4	KFFZZ	61888	20314-30161	PIN, LOCK PART OF KIT P/N 24454-39802	2
	5	KFFZZ	61888	04901-00100	FITTING, LUBRICATION PART OF KIT P/N 24454-39811	1
*	6	KFFZZ	61888	22214-30321	SHIM PART OF KIT P/N 24454-39811	V
*	7	PFFZZ	61888	24454-30511	CENTER ARM ASSEMBLY	1
	8	PFFHH	61888	24454-30411	AXLE ASSEMBLY, VEHI	1
	9	PFHZZ	61888	24454-32091	.SHAFT, AXLE, AUTOMO	1
	10	PFHZZ	61888	24454-32101	.AXLE,AUTOMO	1
	11	PFFZZ	61888	24454-32201	SPINDLE, WHEEL, DRIVI	1
*	12	PFFZZ	61888	04901-00191	FITTING, LUBRICATION PART OF KIT P/N 24454-39802	2
	13	PAFZZ	61888	23458-52031	SHIM	V
*	14	PFFZZ	61888	04901-00190	FITTING, LUBRICATION PART OF KIT P/N 24454-39802	2
	15	PAOZZ	61888	04901-00191	FITTING, LUBRICATION	1
	16	KFFZZ	61888	23654-32081	OIL SEAL PART OF KIT P/N 24454-39811	2
	17	KFFZZ	61888	03146-13201	NEEDLE BEARING PART OF KIT P/N 24454 -39811	2
*	18	KFFZZ	61888	23654-32161	O-RING PART OF KIT P/N 24454-39802	2
	19	PFFZZ	61888	01100-12030	BOLT, MACHINE	2
	20	PFFZZ	61888	01402-00012	NUT, PLAIN, HEXAGON	2
	21	PFFZZ	61888	24454-32161	PIN, STRAIGHT, HEADLE	1
	22	KFFZZ	61888	20224-30061	SET PLATE PART OF KIT P/N 24454-39811	1
*	23	PFFZZ	96906	MS35340-45	WASHER, LOCK PART OF KIT P/N 24454-39811	2
*	24	PFFZZ	61888	01100-08015	BOLT, MACHINE PART OF KIT P/N 24454-39811	2
	25	PFFZZ	61888	24454-32231	KINGPIN, STEERING K99.99.99	2
	26	PAOZZ	61888	04901-00190	FITTING,LUBRICAT	1
*	27	PFFZZ	61888	01400-00010	NUT, PLAIN, HEXAGON PART OF KIT P/N 24454-39802	2
*	28	PFFZZ	61888	02010-00010	WASHER, LOCK PART OF KIT P/N 24454-39802	2
*	29	PFFZZ	15526	125ST-M10	WASHER,FLAT PART OF KIT P/N 24454-39802	2
*	30	KFFZZ	61888	22214-30321	SHIM PART OF KIT P/N 24454-39802	V
	31	PFFZZ	61888	24454-32171	CONNECTOR, ROD END	1
*	32	KFFZZ	61888	03126-83201	BEARING1THRUST PART OF KIT P/N 24454-39802	2

END OF FIGURE

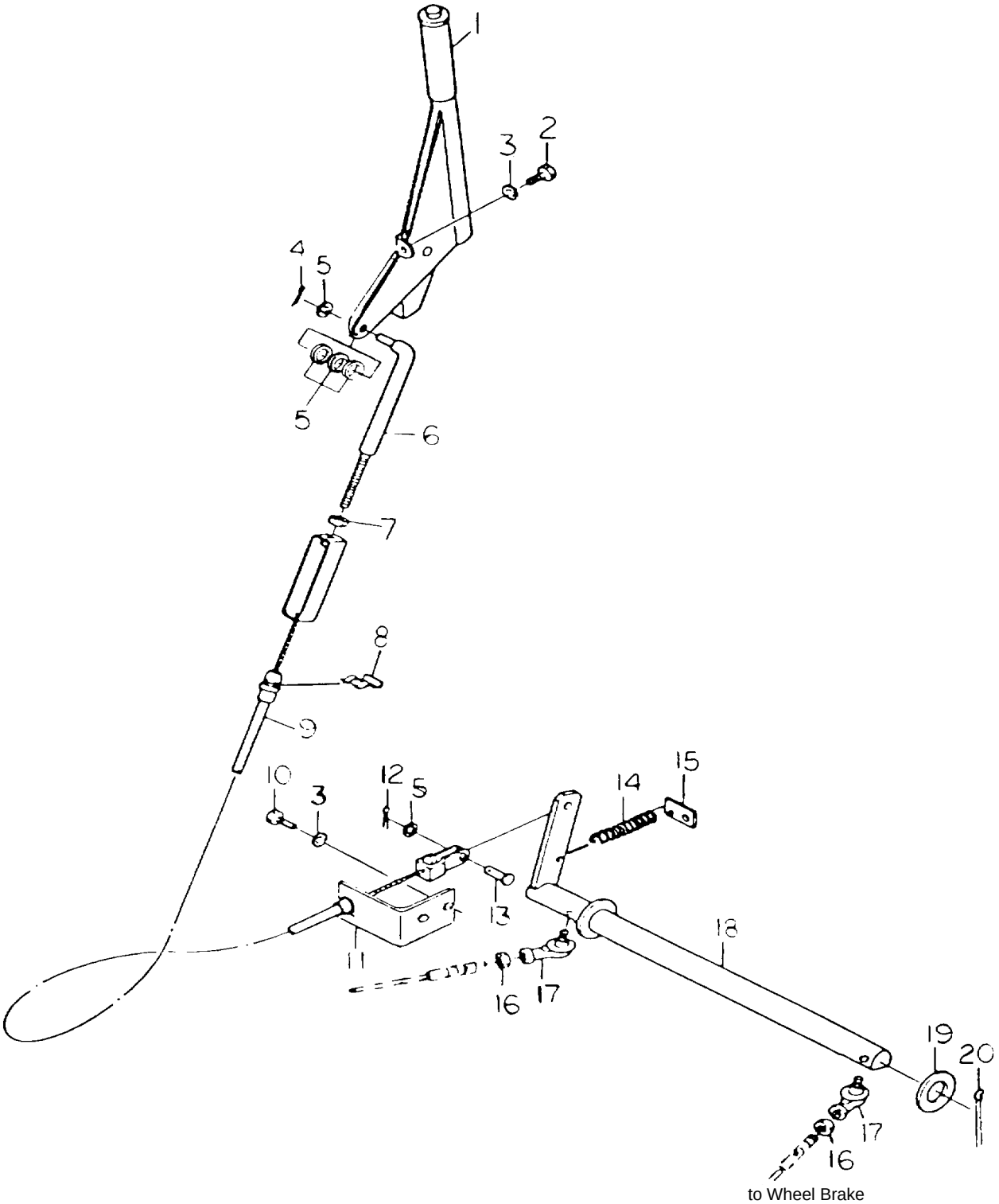

FIGURE 57. HAND BRAKE & LINKAGE

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 12 BRAKES	
					GROUP 1201 HAND BRAKES	
					FIG.57 HAND BRAKE & LINKAGE	
	1	PFFZZ	61888	23655-50301	LEVER,MANUAL	1
*	2	PFFZZ	61888	01100-08015	BOLT,MACHINE	2
*	3	PFFZZ	96906	MS35340-45	WASHER,LOCK.....	4
	4	PFFZZ	96906	MS24665-368	PIN,COTTER	1
*	5	XDFZZ	61888	02000-00008	WASHER,FLAT.....	5
	6	PFFZZ	61888	23455-52001	ROD END,THREAD.....	1
	7	PFFZZ	61888	01402-00006	NUT,PLAIN,HEX.....	1
	8	PFFZZ	61888	22195-52001	BRACKET,ANGLE	2
*	9	PFFZZ	61888	23655-50101A	CONTROL ASSEMBLY,PU	1
*	10	PFFZZ	61888	01100-08020	BOLT,MACHINE	2
	11	PFFZZ	61888	24235-52001	BRACKET,DOUBLE AN.....	1
	12	XDFZZ	61888	02200-16015	PIN,COTTER	1
	13	PFFZZ	61888	02262-08020	PIN,STRAIGHT,HE	1
	14	PFOZZ	61888	23655-32211	SPRING,HELICAL,EX.....	1
	15	PFOZZ	61888	23655-52051	HOLDER,SPRING.....	2
	17	PFFZZ	61888	24357-42091	BALL,JOINT,DOUBLE	2
*	18	XDFZZ	61888	23655-52031	BRACKET,EYE, ROTATIN	1
	19	PFOZZ	61888	02000-00024	WASHER,FLAT.....	1
	20	PFOZZ	96906	MS24665-639	PIN,COTTER	1

END OF FIGURE

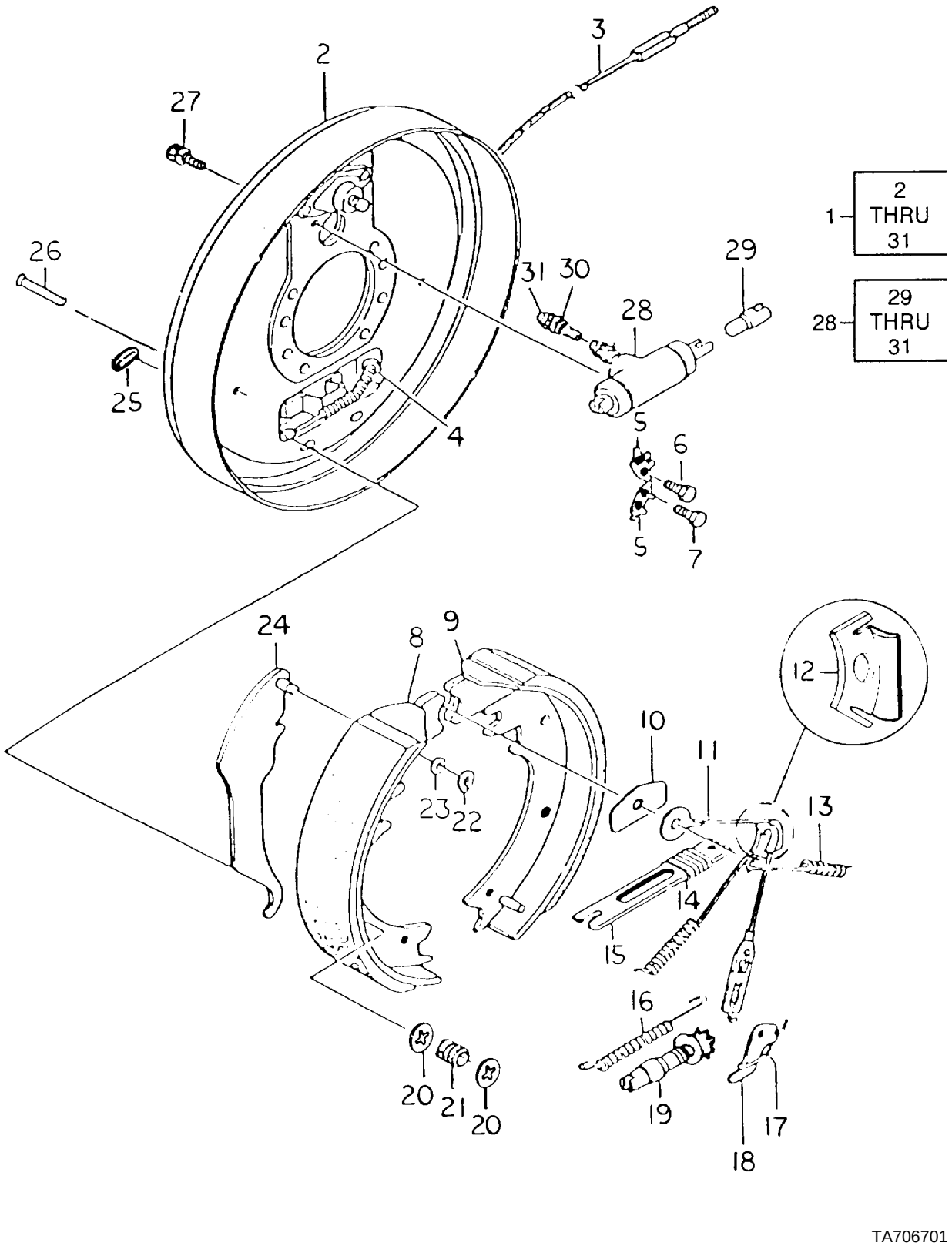

FIGURE 58. SERVICE BRAKE ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 1202 SERVICE BRAKES	
				FIG.58 SERVICE BRAKE ASSEMBLY	
* 1	PFOOO	61888	24453-70214-1202-01	.BRAKE,SHOE TYPE.....	1
* 1	PFOOO	61888	24453-70204-1202-02	.BRAKE, SHOE TYPE.....	1
* 2	XDOZZ	61888	C52-11246-11000	.BACK PLATE,LH.....	1
* 2	XDOZZ	61888	C52-11246-21000	.BACK PLATE,RH,.....	1
* 3	PFOZZ	61888	C52-11246-54602	.WIRE ROPE ASSEMBLY	1
* 4	PFOZZ	61888	C90-9200-0800	.SNAP RING, ,.....	1
* 5	PFOZZ	61888	22673-72001	.WASHER, KEY, ...	4
* 6	PFOZZ	61888	20423-50283	.BOLT,SHOULDER.....	2
* 7	PFOZZ	61888	24453-72061	.BOLT, SHOULDER.....	6
* 8	XDOZZ	61888	C52-11242-73000	.SHOE,LINING,ASSEMB	1
* 9	PAOZZ	61888	C52-11242-83010	.BRAKE SHOE SET,INTE.....	1
* 9	PAOZZ	61888	C52-11242-83020	.BRAKE SHOE SET,INTE	1
* 10	PFOZZ	61888	C52-11239-51270	.PLATE, BACKING,BRAKE.....	1
* 11	PFOZZ	61888	C52-11242-55090	.SPRING,HELICAL,EX,.....	1
* 12	PFOZZ	61888	C52-11003-05143	.GUIDE,CABLE,BRAKE.....	1
* 13	PFOZZ	61888	C52-11242-54010	.SPRING,HELICAL,EX.....	2
* 13	PFOZZ	61888	C52-11242-54011	.SPRING,HELICAL,EX.....	2
* 14	PFOZZ	61888	C52-11232-54540	.SPRING,HELICAL,EX.....	1
* 15	PFOZZ	61888	C52-11242-14530	.LINK,ANCHOR,BRA	1
* 15	PFOZZ	61888	C52-11242-24530	.LINK,ANCHOR,BRA, ...	1
* 16	PFOZZ	61888	C52-11246-54071	.SPRING, HELICAL,EXTE	1
* 17	PFOZZ	61888	C52-11218-15161	.SPRING,FLAT.....	1
* 17	PFOZZ	61888	C52-11218-25161	.SPRING,FLAT.....	1
* 18	PFOZZ	61888	C52-11218-15151	.LEVER,REMOTE	1
* 18	PFOZZ	61888	C52-11218-25151	.LEVER, REMOTE	1
19	PFOZZ	61888	C52-11242-13300	.ADJUSTER, SLACK, BRAK.....	1
* 19	PFOZZ	61888	C52-11242-23300	.ADJUSTER,SLACK,BRAK.....	1
* 20	PFOZZ	61888	C52-51302-53840	.CUP,HYDRAULIC BRAK	4
* 21	PFOZZ	61888	C52-11105-54110	.SPRING,HELICALICO	2
* 22	PFOZZ	61888	C52-10901-64560	.RETAINER,PACKING.....	1
* 23	PFOZZ	61888	C52-10901-64550	.WASHER,LOCK.	1
* 24	PFOZZ	61888	C52-11242-14500	.LEVER,REMOTE	1
24	PFOZZ	61888	C52-11242-24500	.LEVER,REMOTE	1
* 25	PFOZZ	61888	C52-11204-69010	.COVER,ACCESS.....	2
* 26	PFOZZ	61888	C52-51308-54160	.PIN, RETAINING.....	2
* 27	PFOZZ	61888	C90-0567-0820	.BOLT,ASSEMBLED WASH., ...	2
* 28	PFOZZ	61888	C52-11246-52001	.CYLINDER,HYDRAULIC	1
* 29	XDOZZ	61888	99999-01007	..LINK,CONNECTING	2
* 30	XDOZZ	61888	99999-01009	..SCREW, BLEEDER, ...	1
* 31	XDOZZ	61888	99999-01008	..CAP,BLEEDER	1

END OF FIGURE

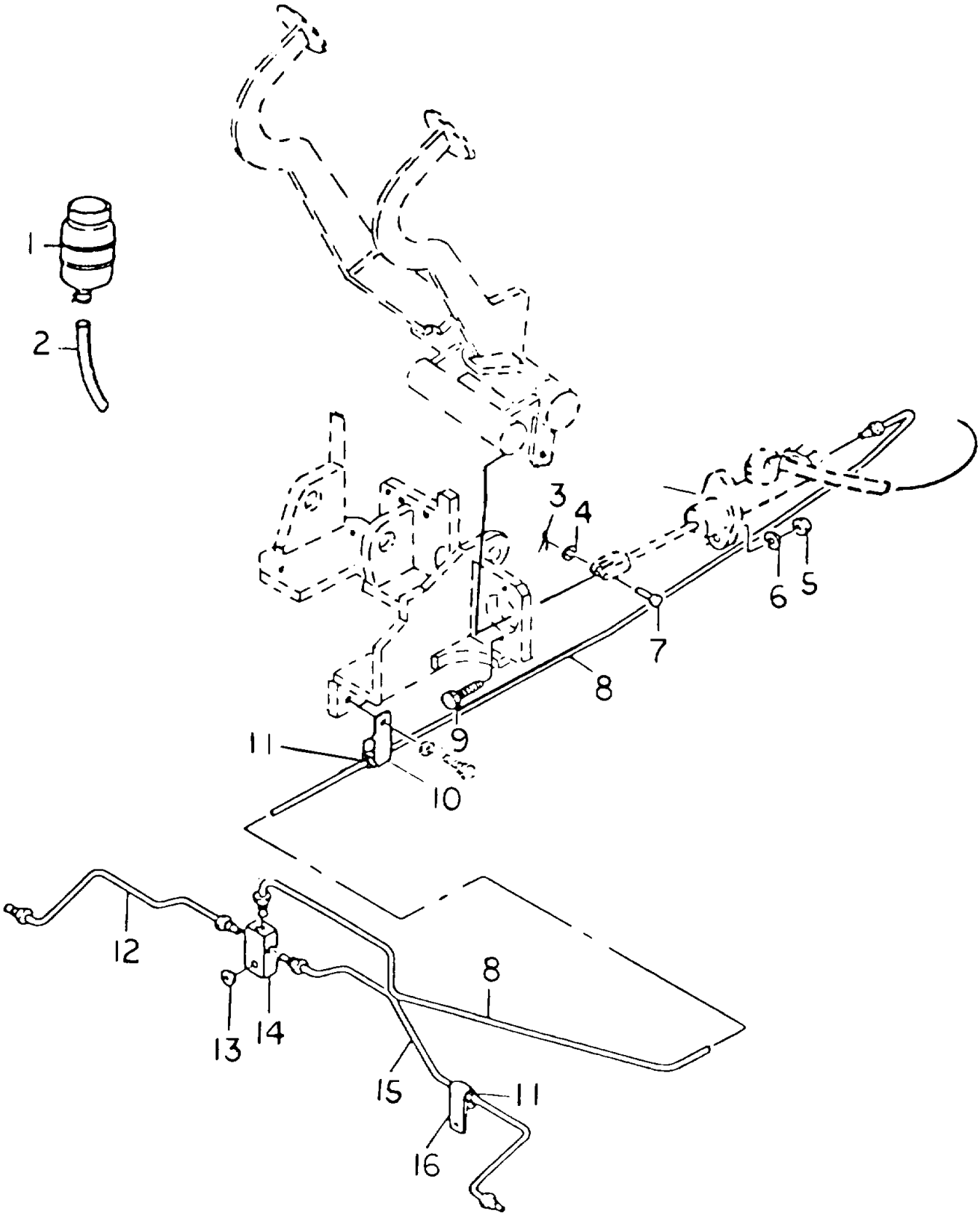

FIGURE 59. HYDRAULIC BPJAKE LINES

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 1204 HYDRAULIC BRAKE SYSTEM	
				FIG.59 HYDRAULIC BRAKE LINES	
* 1	PFOZZ	61888	23775-42101	RESERVOIR, BRAKE FLU	1
* 2	PFOZZ	61888	23655-42271	HOSE,NONMETALLIC	1
* 3	PFOZZ	96906	MS24665-283	PIN,COTTER	1
* 4	XDOZZ	61888	02000-00008	WASHER,FLAT	1
* 5	PFOZZ	61888	01400-00010	NUT,PLAING,HEXAGON	2
* 6	PFOZZ	61888	02010-00010	WASHER,LOCK	2
* 7	PFOZZ	61888	02262-08020	PIN, STRAIGHT,HE	1
* 8	PFOZZ	61888	24465-42001	TUBE ASSEMBLY,META	1
* 9	PFOZZ	61888	01100-10035	BOLT,MACHINE	2
* 10	PFOZZ	61888	24465-42021	CLIP,SPRING TENSION	1
* 11	PFOZZ	61888	1204-11	HOSE,NONMETALLIC	2
* 12	PFOZZ	61888	24455-42041	TUBE ASSEMBLY,META	1
* 13	PFOZZ	61888	02000-00012	WASHER,FLAT	1
* 14	PFOZZ	61888	23745-42101	VALVE,TEE	1
* 15	PFOZZ	61888	24455-42021	TUBE ASSEMBLY,META	1
* 16	PFOZZ	61888	24455-42061	STRAP,RETAINING	1

END OF FIGURE

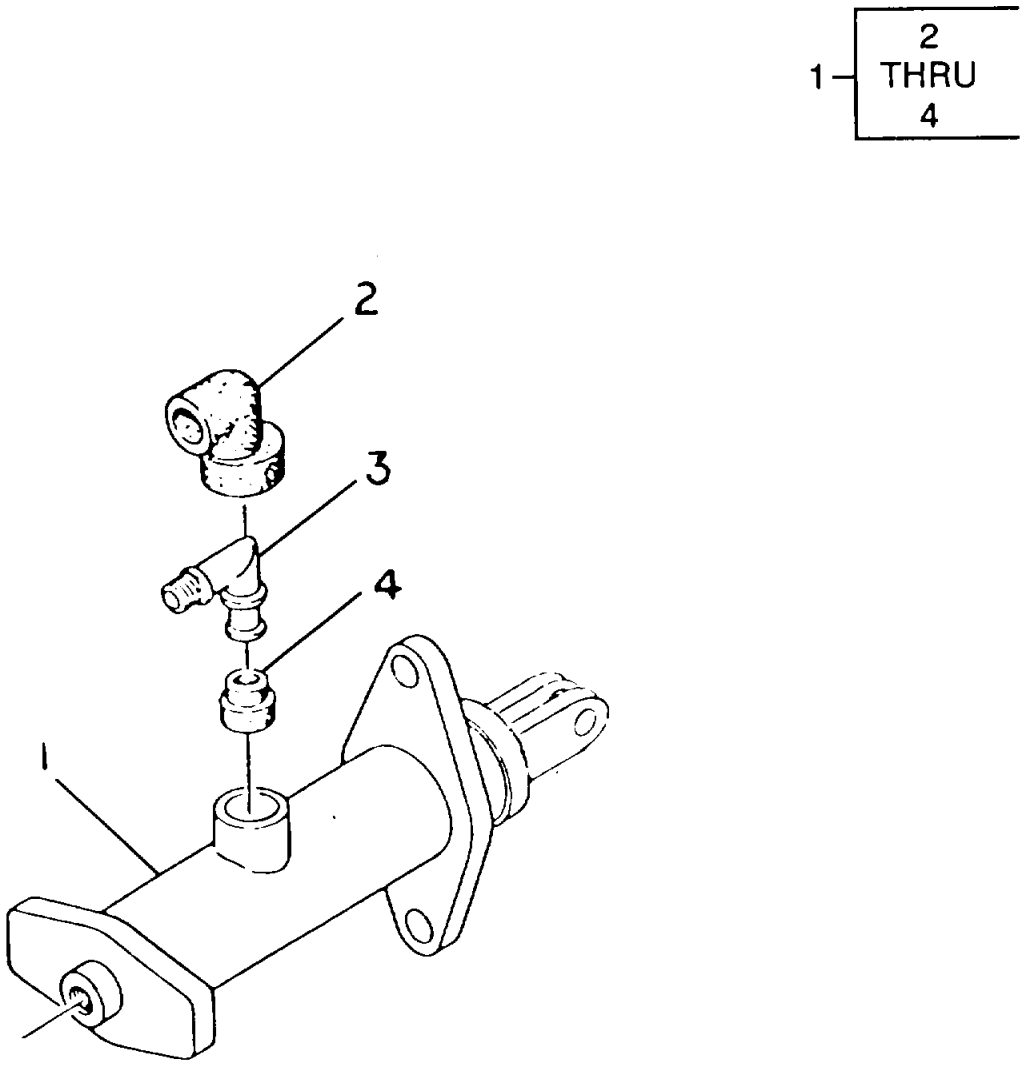

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FIGURE 60. MASTER CYLINDER ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 1204 HYDRAULIC BRAKE SYSTEM	
				FIG.60 MASTER CYLINDER ASSEMBLY	
1	PFOZZ	61888	78260-69353	CYLINDER ASSEMBLY, H	1
2	PFOZZ	61888	BE-0839-49-698	.BOOT, CYLINDER ASSEM	1
3	PFOZZ	61888	BE-2657-49-699	.ELBOW,FLANGE TO TUB°., ...	1
4	PFOZZ	61888	BE-0839-49-686A	.BUSHING, SLEEVE.....	1

END OF FIGURE

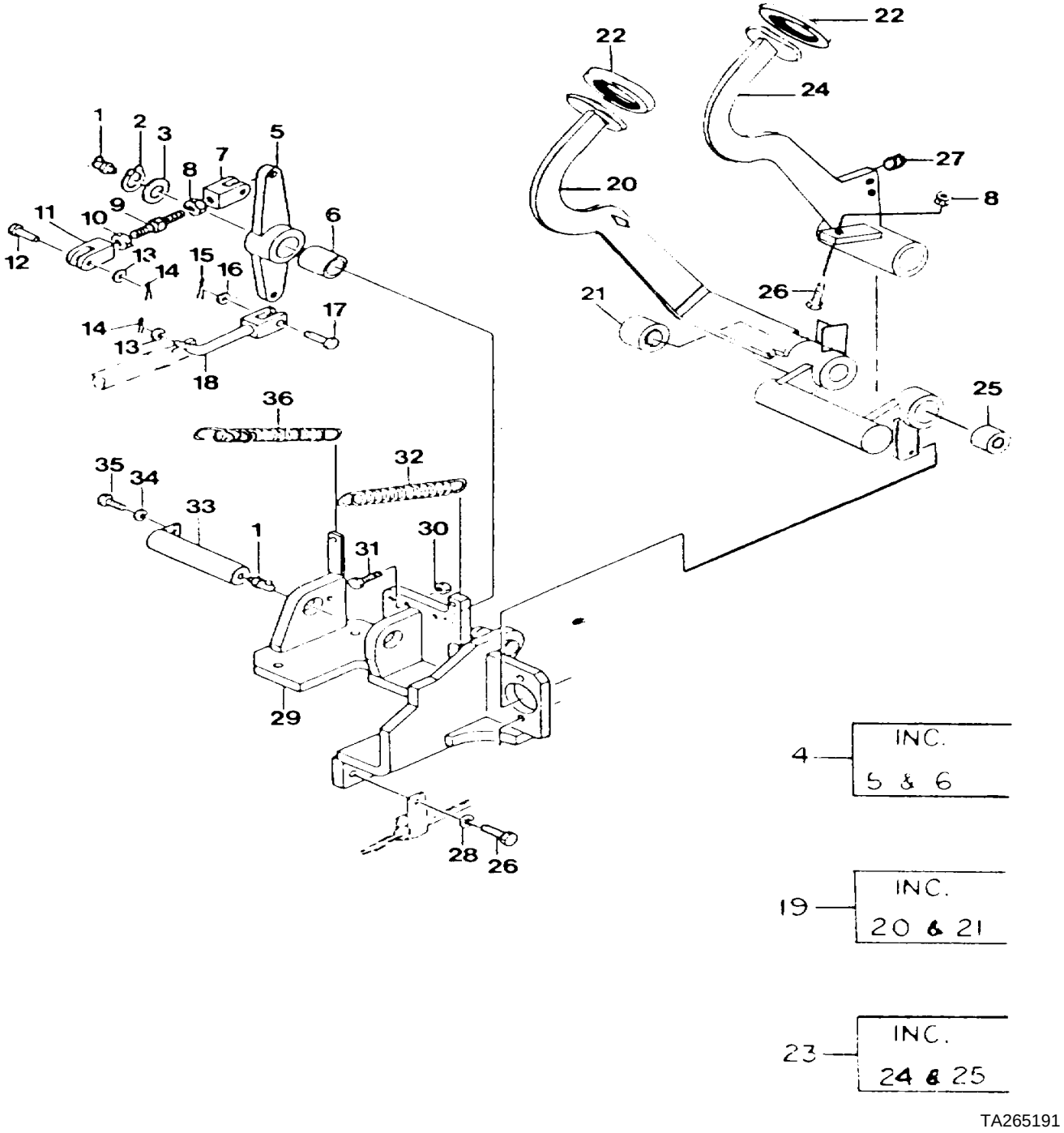

FIGURE 61. MECHANICAL BRAKE SYSTEM

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 1206 MECHANICAL BRAKE SYSTEM	
					FIG. 61 MECHANICAL BRAKE SYSTEM.	
	1	PFFZZ	96906	MS15006-4	FITTING, LUBRICATION	2
	2	PFFZZ	61888	02100-00020	RING, RETAINING	1
	3	PFFZZ	61888	02000-00020	WASHER, FLAT	1
*	4	XDFZZ	61888	23685-40301	CONNECTING LINK, RIG	1
	5	XAFZZ	61888	23658-42031	.LINK	1
	6	PFFZZ	61888	23665-43111	.BUSHING BLANK	1
	7	PFFZZ	61888	23745-42052	CLEVIS, ROD END	1
	8	PFFZZ	61888	01405-00010	NUT, PLAIN, HEXAGON	1
	9	PFFZZ	61888	23745-42031	TIE ROD, TENSIONING.	1
	10	PFFZZ	61888	01400-00010	NUT, PLAIN, HEXAGON	2
	11	PFFZZ	61888	23745-42042	CLEVIS, ROD END	1
	12	PFFZZ	61888	23745-42901	PIN, STRAIGHT, HEAD	2
*	13	PFFZZ	15526	125ST-M10	WASHER, FLAT	3
	14	PFFZZ	96906	MS24665-353	PIN, COTTER	3
	15	PFFZZ	61888	02200-02015	PIN, COTTER	1
*	16	PFFZZ	16004	82024	WASHER, FLAT	1
	17	PFFZZ	61888	02262-08030	PIN, STRAIGHT, HEAD	1
*	18	XDFZZ	61888	24245-42101	CONNECTING LINK, RI	1
	19	PFFZZ	61888	23685-40201	PEDAL, BRAKE, VEHICUL	1
	20	XAFZZ	61888	23685-40211	.PEDAL	1
	21	PFFZZ	61888	23655-42421	.BUSHING, SLEEVE	2
	22	PFFZZ	61888	20315-30021	PAD, PEDAL	2
	23	PFFZZ	61888	23685-40251	PEDAL, CONTROL	1
	24	XAFZZ	61888	23685-40261	.PEDAL	1
	25	PFFZZ	61888	23655-42421	.BUSHING, SLEEVE.	3
	26	PFFZZ	61888	01100-10040	BOLT, MACHINE	5
	27	PFFZZ	61888	23235-40091	SPRING, HELICAL, EX	1
	28	PFFZZ	61888	02010-00010	WASHER, LOCK	4
	29	PFFZZ	61888	23685-42061	BRACKET, EYE, ROT	1
	30	PFFZZ	61888	01402-00008	NUT, PLAIN, HEXAGON	2
	31	PFFZZ	61888	01120-08030	BOLT, MACHINE	2
	32	PFFZZ	61888	20155-30061	SPRING, HELICAL, EXTE	1
	33	PFFZZ	61888	23655-42431	CONNECTOR, ROD ENO	1
*	34	PFFZZ	96906	MS35340-45	WASHER, LOCK	1
*	35	PFFZZ	61888	01100-08015	BOLT, MACHINE	1
*	36	XDFZZ	61888	24235-42091	SPRING, HELICAL,EX	1

END OF FIGURE

2-	3,4& Fig. 64-1,2&3
3-	INC. 4

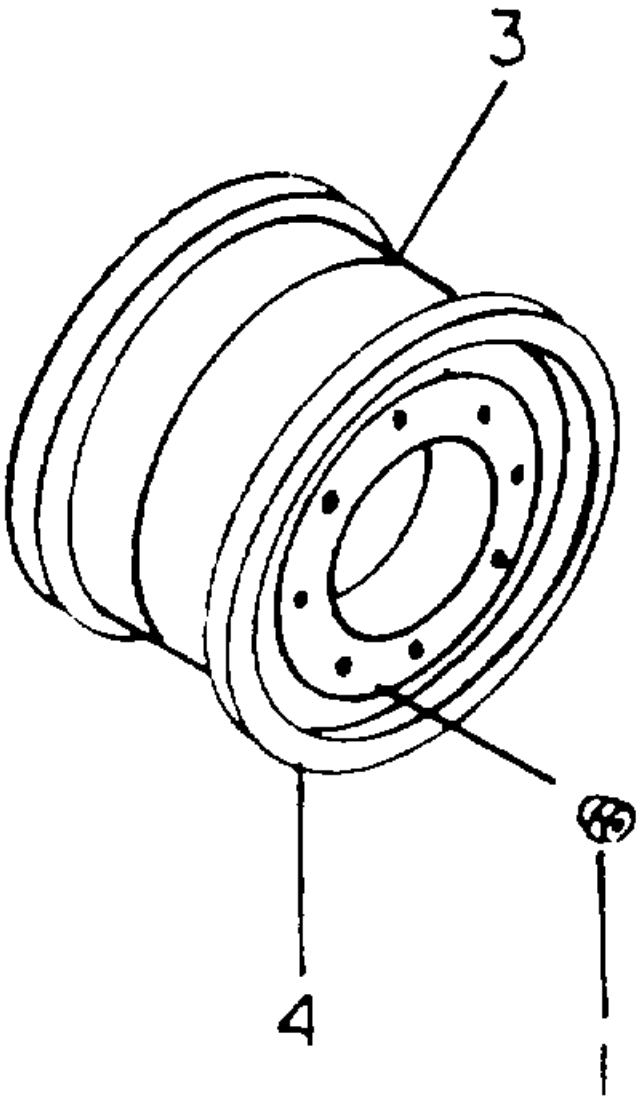

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FIGURE 62. RIM ASSEMBLY, DRIVE

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 13 WHEELS	
				GROUP 1311 WHEEL ASSEMBLY	
				FIG. 62 RIM ASSEMBLY, DRIVE	
1	PAOZZ	61888	23913-02041	NUT, PLAIN, CONE SE	12
2	AOOOF	61888	24454-40211	FRONT WHEEL ASSY	2
3	PFOZZ	61888	24454-40221	.RIM, WHFEL, PNEUMAT	2
4	PFOZZ	61888	22439-44031	..RING, SIDE, AUTOMOT	2
				END OF FIGURE	

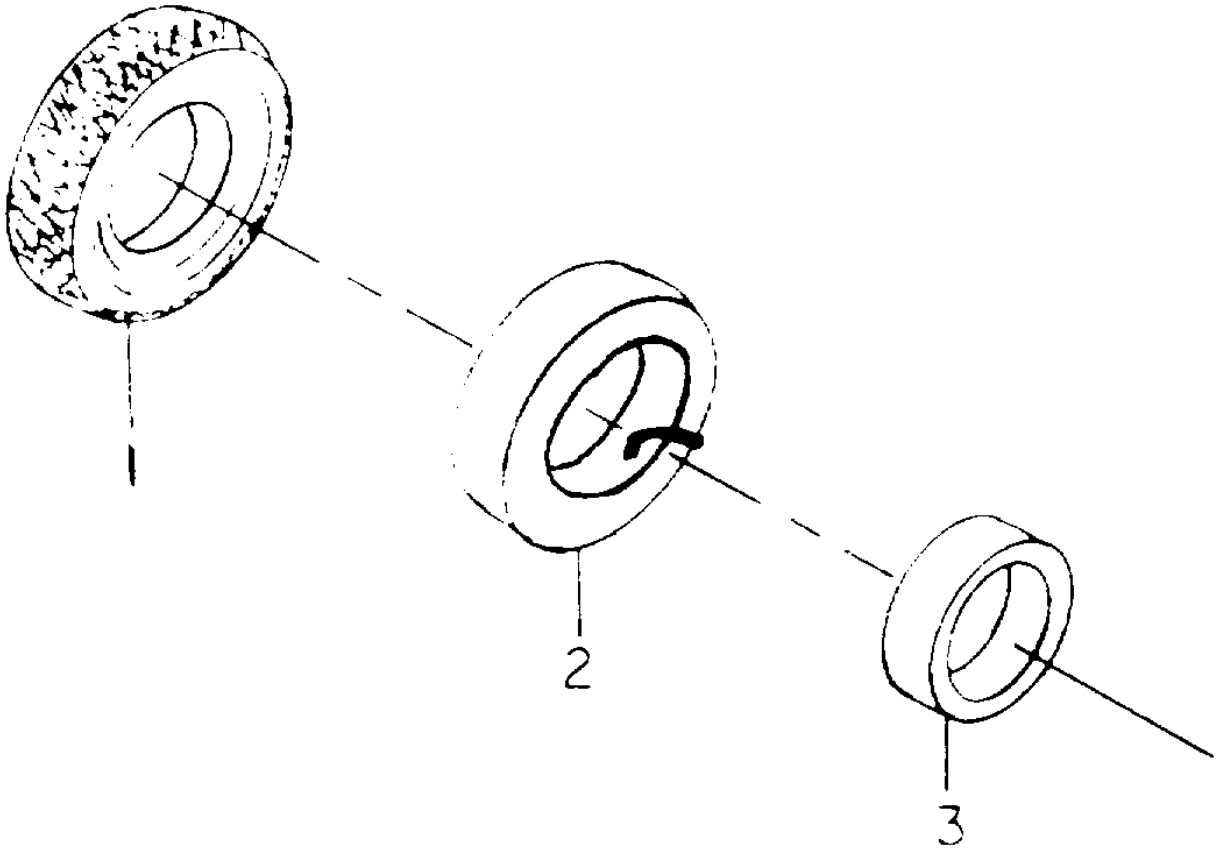

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FIGURE 63. TIRE, TUBE, FLAP, DRIVE WHEELS

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 1311 WHEEL ASSEMBLY	
				FIG. 63 RIM ASSEMBLY E HUB, STEERING	
* 1	PFFZZ	61888	22194-32361	HUB CAP,WHEEL	2
* 2	PFFZZ	61688	02200-06055	PIN, COTTER	2
* 3	PFFZZ	61888	01412-00030	NUT,PLAIN, CASTELL	2
* 4	PFFZZ	61888	02000-00030	WASHER, FLAT	2
* 5	PAFZZ	61888	03071-30206	BEARING, ROLLER, TAPE	2
* 6	PFFZZ	61888	20224-40014	HUB, WHEEL, VEHICULAR	2
* 7	PAFZZ	61888	03071-30211	BEARING, ROLLER, TA	2
* 8	PAFZZ	61888	03217-08501	SEAL, PLAIN,ENCASE	2
* 9	KFOZZ	61888	23654-32041	BOLT PART OF KIT P/N 23654-39821	16
* 10	KFOZZ	61888	23654-34051	NUT, HUB PART OF KIT P/N 23654-39821	16
* 11	AOOOF	61888	52436-80801	REAR WHEEL ASSEMBLY,	2
* 12	PFOZZ	61888	22304-40302	.WHEEL, PNEUMATIC TIR	2
* 13	XAOZZ	61888	99999-01048	..RIM, OUTSIDE	2
* 14	XAOZZ	61888	99999-01047	..RIM, INSIDE	2
* 15	PFOZZ	61888	01400-00012	..NUT, PLAIN, HEXAGON PART OF KIT P/N 23654-49811	16
* 16	PFOZZ	61888	02010-00012	..WASHER, LOCK PART OF KIT P/N 23654-49811	16
* 17	PFOZZ	61888	01100-12025	..BOLT, MACHINE PART OF KIT P/N 23654-49811	16

END OF FIGURE

11–	12 THRU 17 & FIG.65-1,2,3
12–	13 THRU 17

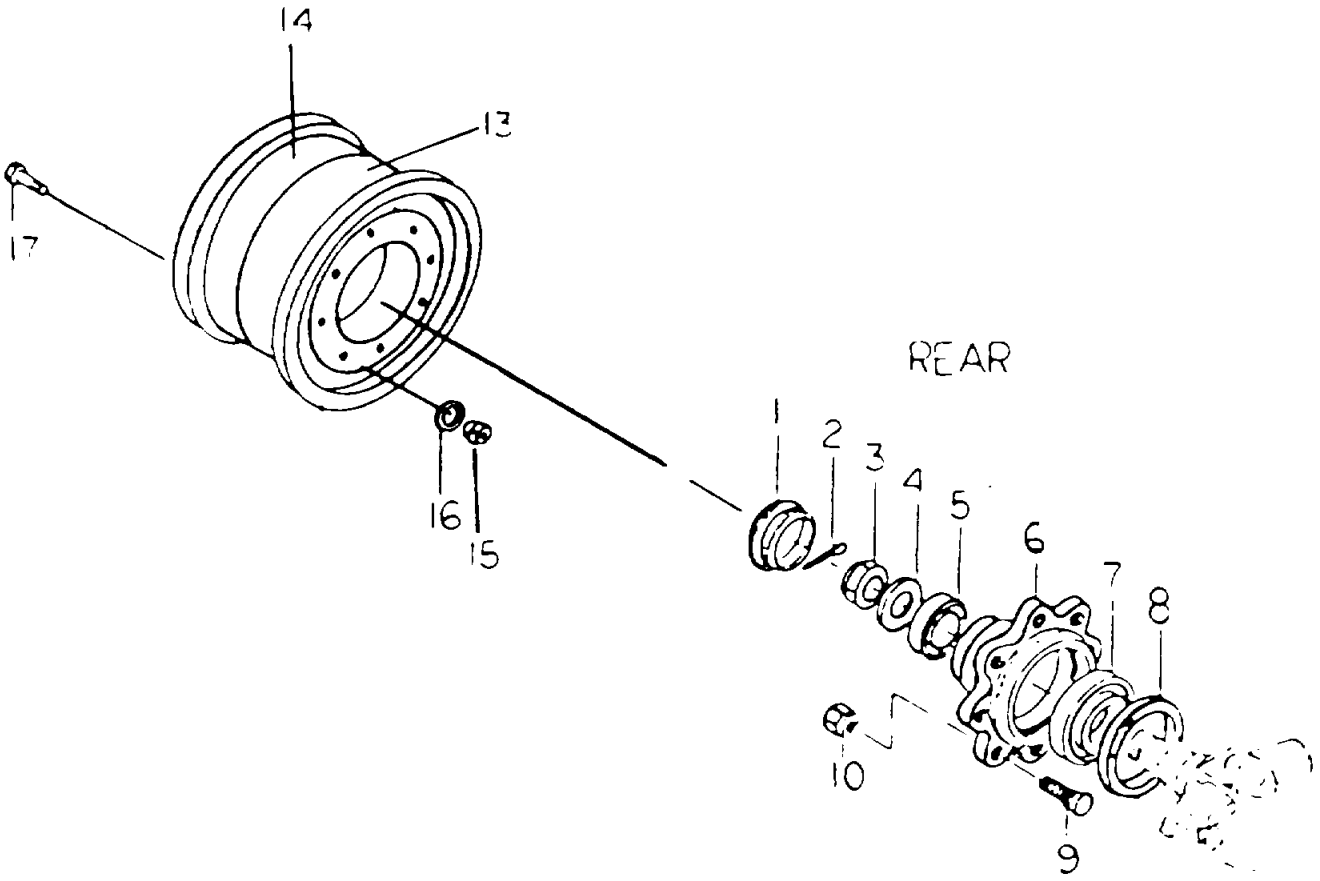

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FIGURE 64. RIM ASSEMBLY & HUB, STEERING

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 1313 TIRES, TUBES	
					FIG. 64 TIRE, TUBE, FLAP, DRIVE WHEELS	
*	1	PAOOO	81348	GPI/TYC/815/28X9-15/F/FL/ROCKLUG	.TIRE,PNEUMATIC.....	2
*	2	PAOOO	81348	ZZ-I-550/815/28X9-15/TR77A/ONCTR	.INNER TUBE,PNEUMATI.	2
*	3	PFOZZ	73842	10F64	.FLAP,INNER TUBE,PNE.	2

END OF FIGURE

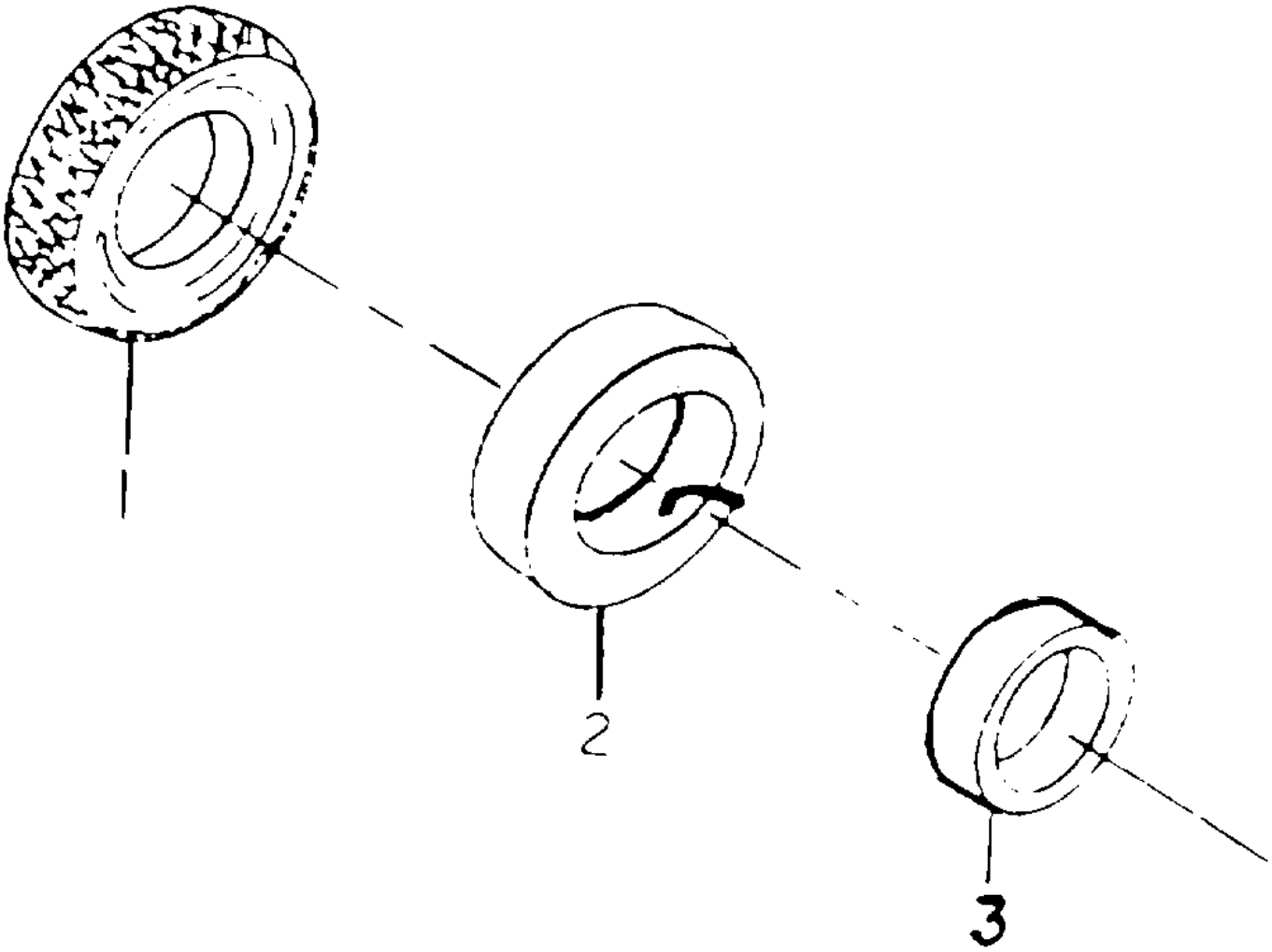

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FIGURE 65. TIRE, TUBE, FLAP, STEER WHEELS

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 1313 TIRES, TUBES	
					FIG. 65 TIRE TUBE, FLAP,STEER WHEELS	
*	1	PAOOO	81348	GP1C/6.50-10/E/F LTR	.TIRE,PNEUMATIC	2
*	2	PAOOO	81348	GP5/6.50-10O/TR15 OCW/OFF CENTER	.INNER TUBE,PNEUMATI	2
*	3	PFOZZ	73842	10F64	.FLAP,INNER TUBE,PNE	2

END OF FIGURE

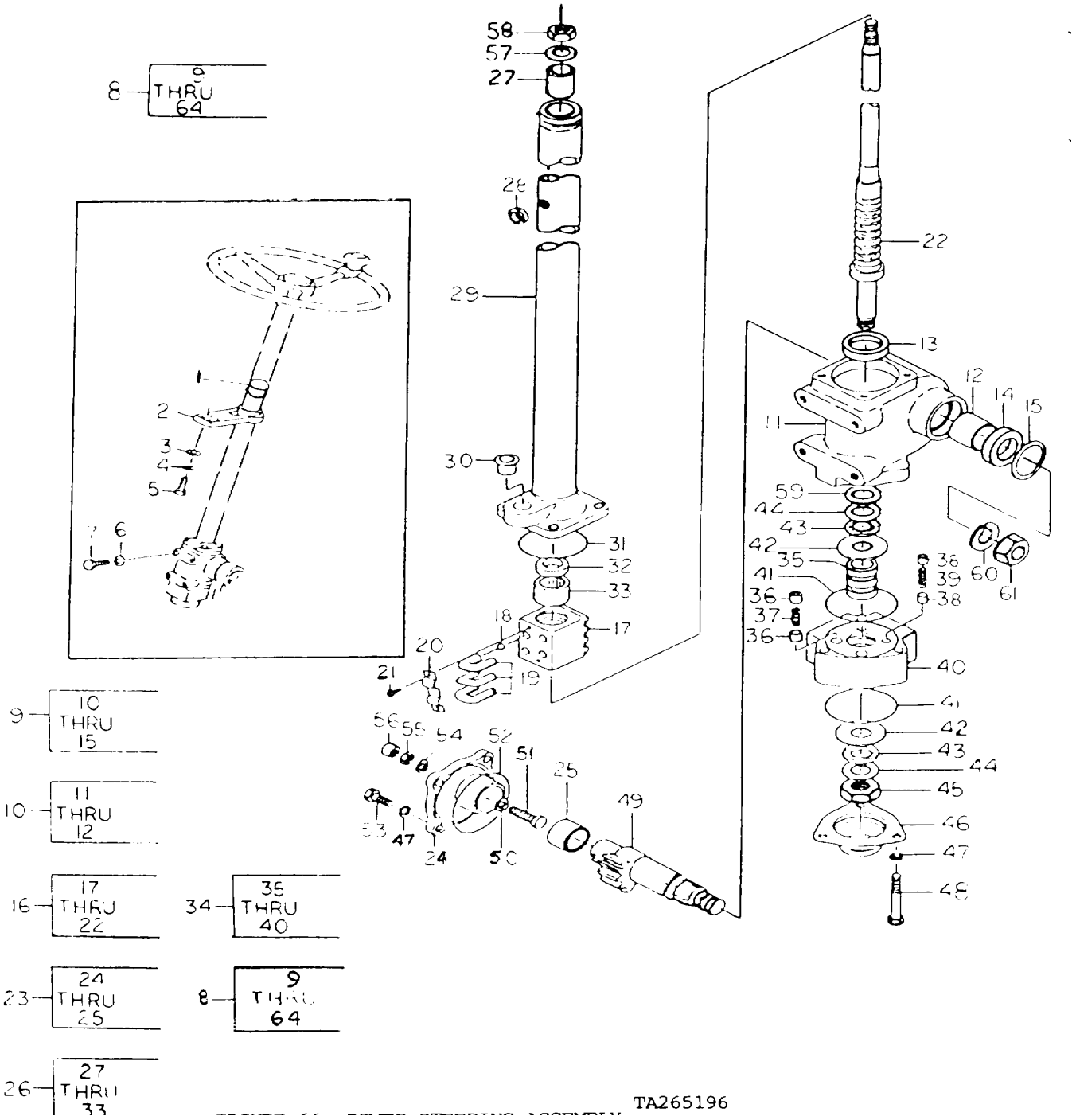

FIGURE 66. POWER STEERING ASSEMBLY

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 14 STEERING	
					GROUP 1407 POWER STEERING GEAR ASSEMBLY	
					FIG. 66 POWER STEERING ASSEMBLY	
	1	PFFZZ	61888	22114-10031	GROMMENT,NONMET	1
*	2	XDFZZ	61888	23654-13001	PLATE,RETAINING, S	1
*	3	PFFZZ	15526	125ST-M10	WASHER,FLAT	2
	4	PFFZZ	61888	02010-00010	WASHER,LOCK	2
	5	PFFZZ	61888	01100-10030	BOLT,MACHINE	2
	6	PFFZZ	61888	02010-00012	WASHER,LOCK	4
	7	PFFZZ	61888	01100-12030	BOLT,MACHINE	4
	8	PFFHH	61888	14354-10201	STEERING GEAR	1
	9	XAHHH	61888	14354-10301	.GEAR BOX ASSY	1
	10	XAHZZ	61888	14354-10401	..GEAR BOX SUB ASSY.·	1
	11	XAHZZ	61888	99999-01041	...BOX, GEAR	1
	12	XAHZZ	61888	3-23641-03703	...BUSHING .,	1
	13	PFHZZ	61888	14354-12001	..BEARING,ROLLER, NE	1
*	14	KFHZZ	61888	14354-12021	..SEAL,OIL PART OF KIT P/N 14354-12291	1
	15	PFHZZ	61888	02110-00048	..RING, RETAINING	1
	16	PFHZZ	61888	14354-10501	.BALL NUT ASSEMBLY	1
	17	XAHZZ	61888	B-23641-06601	..NUT,BALL	1
	18	XAHZZ	61888	B-23441-04902	..BALL.	56
	19	XAHZZ	61888	B-23641-06801	..TUBE	4
	20	XAHZZ	61888	B-23641-06901	..CLAMP, TUBE	1
	21	XAHZZ	61888	B-23641-03311	..SCREW	2
	22	XAHZZ	61888	B-23642-00722	..WORM & STRG SHAFT	1
*	23	PFHZZ	61888	14354-10601	.FLANGE AND BEARING	1
	24	XAHZZ	61888	99999-01042	..COVER, SIDE	1
	25	XAHZZ	61888	B-23641-03702	..BUSHING	1
	26	XAHHH	61888	14354-10701	.COLUMN ASSEMBLY	1
	27	PFHZZ	61888	14354-12051	..BUSHING BLANK	1
	28	PFFZZ	61888	14354-12071	..GROMMET,NONMETAL	1
	29	PFHZZ	61888	14354-10801	..COLUMN, STEERING	1
	30	PFFZZ	61888	14354-12091	..BUSHING,SLEEVE	1
	31	KFHZZ	61888	14354-12061	..O-RING PART OF KIT P/N 14354-12291	1
	32	KFHZZ	61888	14354-12041	..SEAL, OIL PART OF KIT P/N 14354-12291	1
	33	KFHZZ	61888	14354-12031	..NEEDLE BEARING PART OF KIT P/N 14354-12291	1
*	34	PFHZZ	61888	14354-10902	.HOUSING, MECHANICAL	1
	35	XAHZZ	61888	B-23641-00516	..SPOOL	1
	36	PFHZZ	61888	14354-12111	..PIN, PISTON	4
	37	PFHZZ	61888	14354-12121	..SPRING, HELICAL, CO	2
	38	PFHZZ	61888	14354-12101	..PIN, PISTON	4
	39	PFHZZ	61888	14354-12131	..SPRING,HELICAL,CO	2
	40	XAHZZ	61888	B-23642-00422	..HOUSING,VALVE	1
	41	KFHZZ	61888	14354-12201	.O-RING PART OF KIT P/N 14354-12291	2
	42	PFHZZ	61888	14354-12141	.SPACER, RING	2

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
* 43	KFHZZ	61888	14354-12161	.BEARING,NEEDLE PART OF KIT P/N 14354-12291	2
44	PFHZZ	61888	14354-12151	.SPACER,RING	2
45	PFHZZ	61888	14354-12171	.NUT,PLAIN,HEX	1
46	PFHZZ	61888	14354-12181	.COVER,ACCESS	1
47	PFHZZ	61888	02010-00010	.WASHER, LOCK	11
48	PFHZZ	61888	01106-10058	.BOLT,MACHINE	3
49	PFHZZ	61888	14354-12231	.GEARSHAFT, SPUR	1
50	PFHZZ	61888	14354-12221	.SHIM	1
51	PFHZZ	61888	14354-12211	.SCREW,MACHINE	1
52	KFHZZ	61888	14354-12241	.O-RING PART OF KIT P/N 14354-12291	1
53	PFHZZ	61888	01103-10025	.BOLT,MACHINE	8
54	PFHZZ	61888	14354-12251	.PACKING,PREFORMED	2
55	PFHZZ	61888	01402-10010	.NUT,PLAIN,HEX	1
56	PFHZZ	61888	14354-12261	.NUT,PLAIN, CAP	1
57	PFFZZ	61888	14354-12271	.WASHER,FLAT	1
58	PFFZZ	61888	01402-00014	.NUT,PLAIN,HEX	1
59	PFHZZ	61888	14354-12191	.SPACER,RING	1
60	PFHZZ	96906	MS35338-71	.WASHER, LOCK	1
61	PFHZZ	61888	01400-00022	.NUT, PLAIN,HEX	1

END OF FIGURE

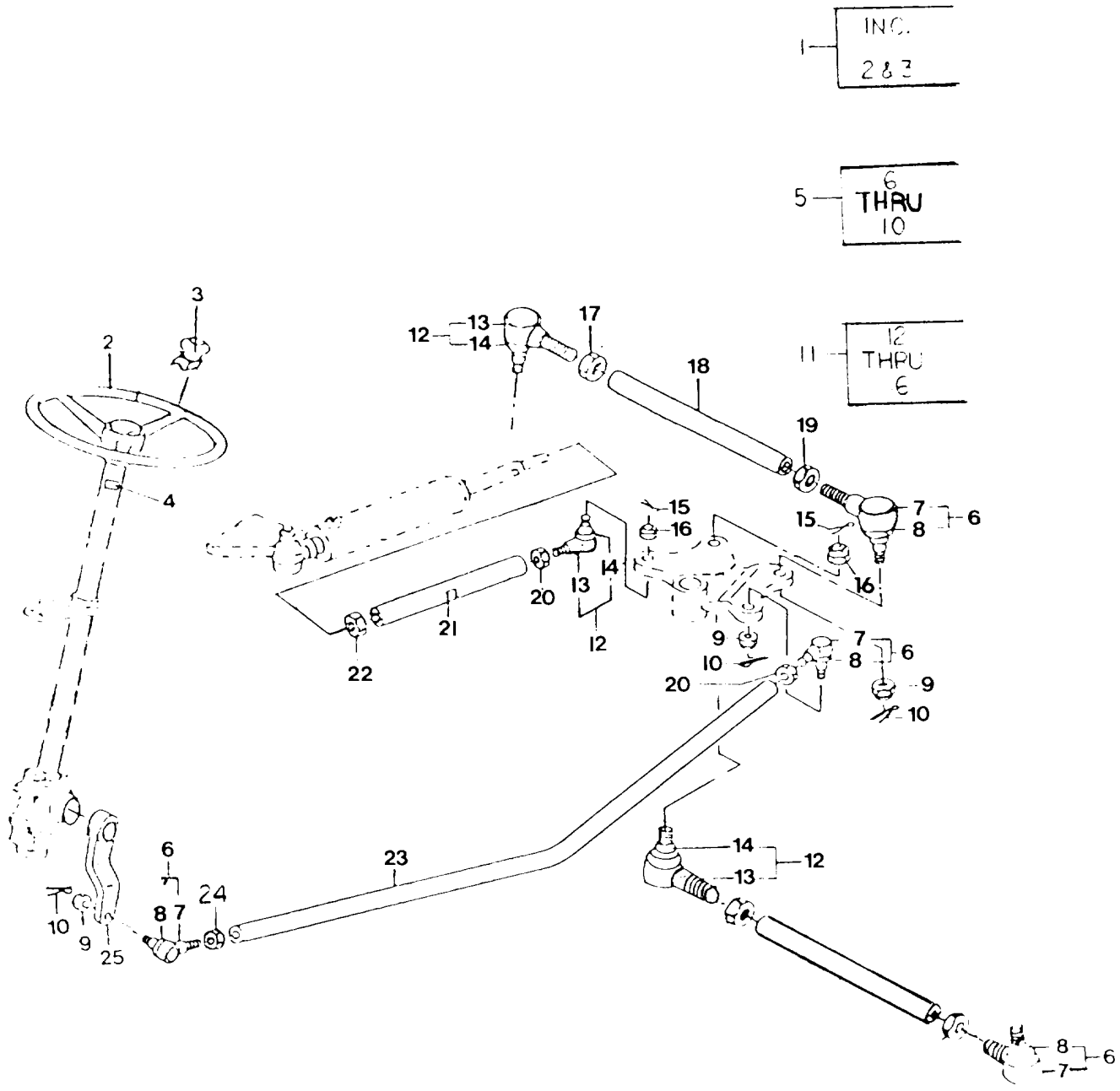

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FIGURE 67. STEERING, DRAG LINK & TIE RODS

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 1407 POWER STEERING ASSEMBLY	
					FIG. 67 STEERING DRAG LINK & TIE RODS	
	1	PFFZZ	61888	24354-12001	STEERING WHEEL	1
	2	XAFZZ	61888	24354-12011	.WHEEL HANDLE	1
	3	PFFZZ	61888	24354-12061	.GRIP ASSEMBLY	1
*	4	XDOZZ	61888	27919-12041	DECAL	1
	5	PFFZZ	61888	24234-30551	BALL JOINT	4
	6	XAFZZ	61888	24234-32331	.BALL JOINT SUB ASSY	4
	7	XAFZZ	61888	24234-32341	..BALL JOINT	4
	8	XAFZZ	61888	24234-32351	..DUST COVER	4
	9	PAFZZ	61888	01412-10016	.NUT, PLAIN CASTEL	4
	10	PAFZZ	61888	02200-32032	.PIN, COTTER .	4
	11	PFFZZ	61888	24234-30561	BALL JOINT	3
*	12	XAFZZ	61888	24234-30561	.BALL JOINT	3
	13	XAFZZ	61888	24234-32391	..BALL JOINT	3
	14	XAFZZ	61888	24234-32351	..DUST COVER	3
	15	PAFZZ	61888	02200-32032	.PIN, COTTER	3
	16	PAFZZ	61888	01412-10016	.NUT, PLAIN, CASTEL	3
	17	PFFZZ	61888	24234-32421	NUT, PLAIN, HEX	2
	18	PFFZZ	61888	24454-32251	TIE ROD, TENSIONING	2
	19	PFFZZ	61888	24234-32411	NUT, PLAIN, HEX	2
	20	PFFZZ	61888	01407-00022	NUT, PLAIN, HEX	2
	21	PFFZZ	61888	24454-52011	TURNBUCKLE	1
	22	PFFZZ	61888	01400-00024	NUT, PLAIN, HEX	1
	23	PFFZZ	61888	24454-22011	DRAG LINK, STEERING	1
	24	PFFZZ	61888	01402-00022	NUT, PLAIN HEX	2
	25	PFHZZ	61888	24454-22021	CONNECTING LINK, RI	1

END OF FIGURE

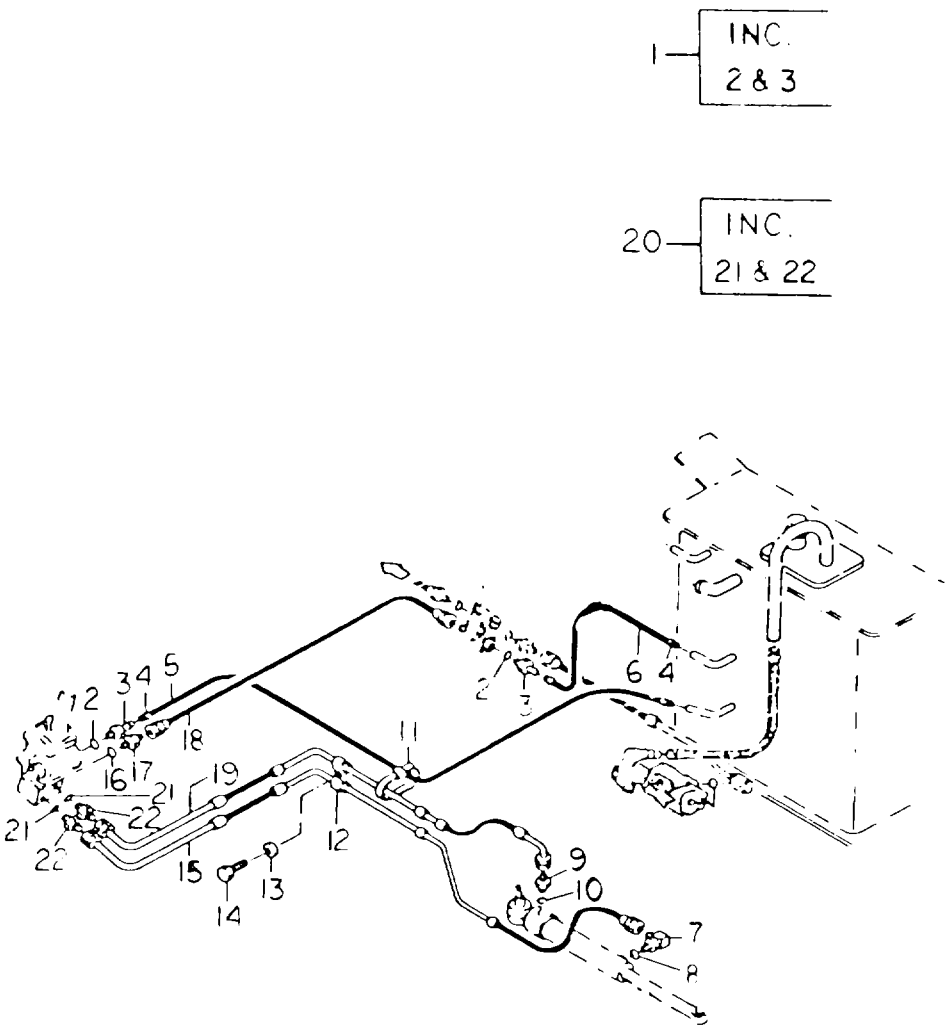

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FIGURE 68. STEERING, HOSES, LINES & FITTINGS

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 1411 HOSE, LINES, FITTINGS	
					FIG. 68 STEERING, HOSES, LINES, FITTINGS	
	1	PFFZZ	61888	57246-04101	NIPPLE, HOSE	2
	2	PAFZZ	61888	03320-00140	.PACKING PREFORMED	2
	3	XAFZZ	61888	57246-02251	.NIPPLE	2
	4	PFFZZ	61888	04911-00023	CLAMP HOSE	4
	5	PFFZZ	61888	04710-04090	HOSE NONMETALLIC	1
	6	PFFZZ	61888	04710-04021	HOSE NONMETALLIC	1
	7	PFFZZ	61888	04150-00202	ELBOW, PIPE TO HOSE	1
	8	PAFZZ	61888	03320-00110	PACKING, PREFORMED	1
	9	PFFZZ	61888	04134-00202	NIPPLE, PIPE	1
	10	PAFZZ	61888	03320-00110	PACKING, PREFORMED	1
*	11	PFFZZ	53421	T50R	STRAP, TIEDOWN, ELECT	1
	12	PFFZZ	61888	20317-60331	STRAP, RETAINING	2
*	13	PFFZZ	96906	MS35340-45	WASHER, LOCK	2
	14	PFFZZ	61888	01100-08025	BOLT1MACHINE	2
	15	PFFZZ	61888	23657-62491	HOSE ASSEMBLY, NON	1
	16	PAFZZ	61888	03320-00140	PACKING1PREFORMED	1
*	17	XDFZZ	61888	04134-00303	NIPPLE, PIPE	1
	18	PFFZZ	61888	04461-03055	HOSE, NONMETALLIC	1
	19	PFFZZ	61888	23657-62481	TUBE ASSEMBLY, META	1
	20	PFFZZ	61888	23657-60311	ADAPTER, STRAIGHT	2
	21	PAFZZ	61888	03320-00140	.PACKING, PREFORMED	2
	22	XAFZZ	61888	23657-62501	.NIPPLE	2

END OF FIGURE

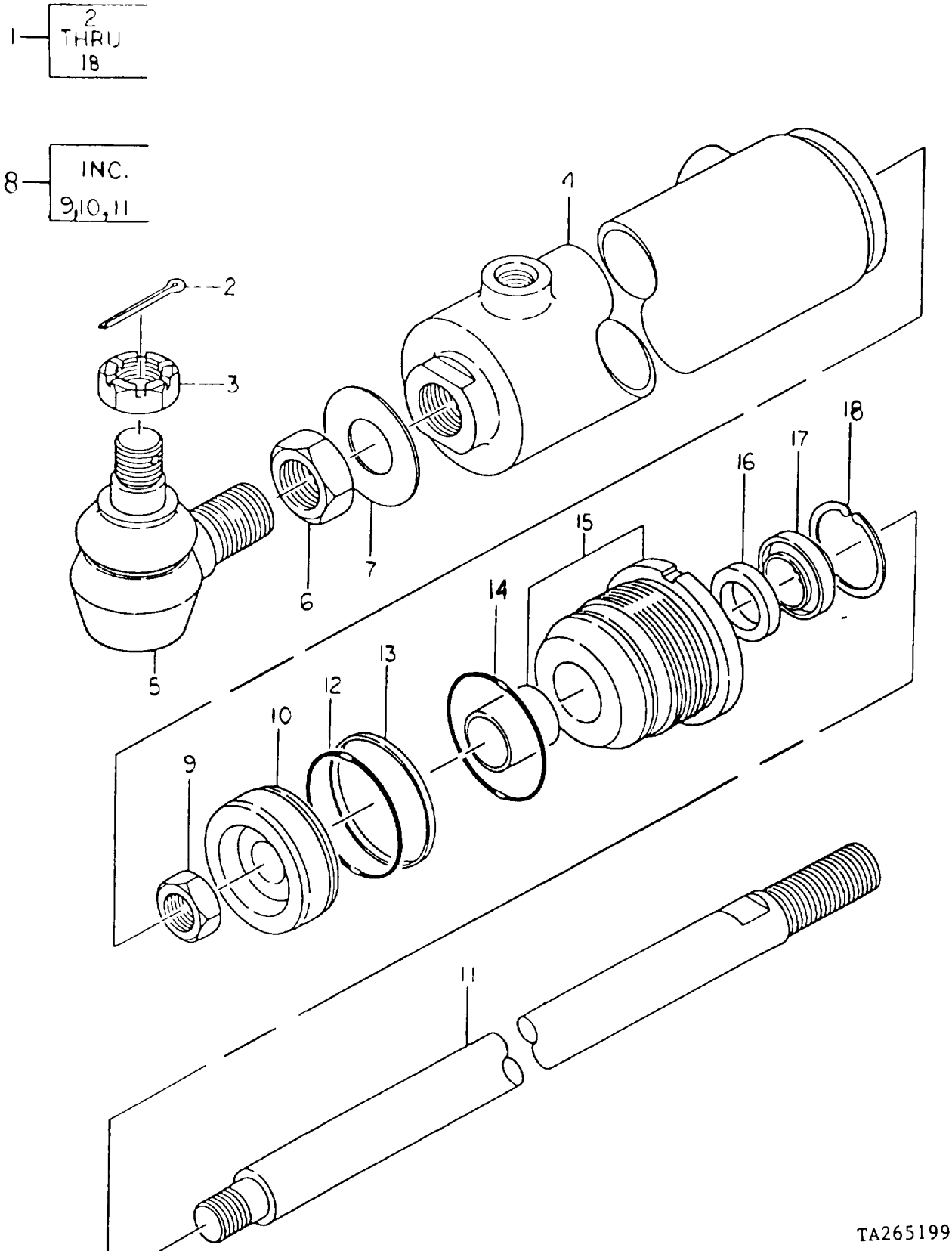

FIGURE 69. STEERING, POWER CYLINDER ASSEMBLY

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 1412 HYDRAULIC CYLINDERS	
					FIG. 69 STEERING, POWER CYLINDER ASSEMBLY	
*	1	XDFZZ	61888	23654-52251	CYLINDER, ASSY	1
	2	PFFZZ	61888	02200-04040	.PIN, COTTER	1
	3	PFFZZ	61888	23654-52181	.NUT	1
*	4	XAFZZ	61888	23654-52101	.CYLINDER	1
	5	PFFZZ	61888	23654-52151	.BALL JOINT, VEHICULA	1
	6	PFFZZ	61888	01402-00024	.NUT PLAIN, HEXAGON	1
	7	PFFZZ	61888	23654-52161	.WASHER FLAT	1
	8	PFFFF	61888	23654-52251	.ROD,PISTON,LINEAR A	1
	9	PFFZZ	61888	23654-52231	..NUT, PLAIN HEXAGON	1
	10	XAFZZ	61888	23654-52221	..PISTON	1
	11	XAFZZ	61888	23654-52211	..ROD	1
	12	KFFZZ	61888	03300-00500	.O-RING PART OF KIT P/N 23654-52201	1
	13	KFFZZ	61888	23654-52121	.SEAL SLIPPER PART OF KIT P/N 23654-52201	1
	14	KFFZZ	61888	03310-00550	.O-RING PART OF KIT P/N 23654-52201	1
	15	PFFZZ	61888	23654-52131	.CAP, LINEAR ACTUATIN	1
	16	KFFZZ	61888	23654-52141	.U-RING PART OF KIT P/N 23654-52201	1
	17	KFFZZ	61888	22198-52101	.WIPER, DUST PART OF KIT P/N 23654-52201	1
	18	PFFZZ	61888	02110-00042	.RING, RETAINING	1

END OF FIGURE

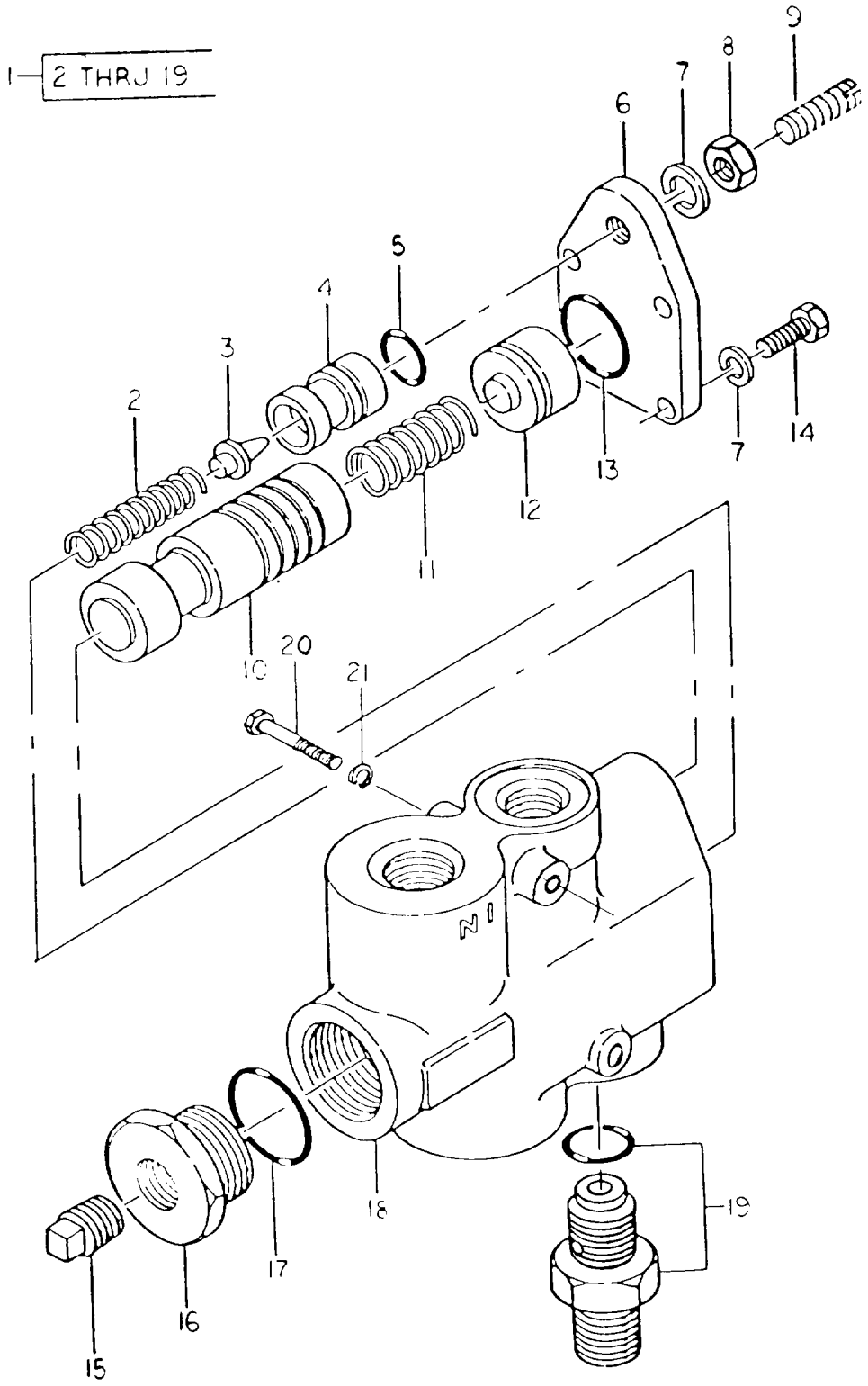

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FIGURE 70. RELIEF VALVE ASSEMBLY

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 1414 STEERING SYSTEM VALVES	
					FIG. 70 RELIEF VALVE ASSEMBLY	
*	1	PFFZZ	61888	24457-60301	VALVE, LINEAR, DIRECT	1
	2	PFFZZ	61888	B-21731-30306	.SPRING, HELICAL, CO	1
	3	PFFZZ	61888	B-21731-30501	.DISK, VALVE	1
	4	XAFZZ	61888	99999-01045	.HOUSING.....	1
	5	PFFZZ	61888	03300-00120	.PACKING, PREFORMED	1
	6	XAFZZ	61888	B-21731-30403	.PLATE	1
*	7	PFFZZ	96906	MS35340-45	.WASHER, LOCK.....	1
	8	PFFZZ	61888	01400-00008	.NUT, PLAIN, HEXAGON	1
	9	PFFZZ	61888	B-91511-08201	.SETSCREW	1
	10	XAFZZ	61888	99999-01044	.SPOOL	1
	11	PFFZZ	61888	B-21621-50501	.SPRING, HELICAL. CO	1
	12	PFFZZ	61888	B-21731-30605	.PLUG, RELIEF VALVE	1
	13	PFFZZ	61888	03300-00180	.PACKING, PREFORMED	1
*	14	PFFZZ	61888	01100-08020	.BOLT, MACHINE	1
	15	PFFZZ	61888	04000-00200	.PLUG PIPE	1
	16	PFFZZ	61888	B-21731-30601	.PLUG, VENT	1
	17	PFFZZ	61888	03320-00240	.PACKING, PREFORMED	1
	18	XAFZZ	61888	99999-01043	.BODY	1
	19	PFFZZ	61888	B-21733-40201	.ADAPTER, STRAIGHT P.....	1
	20	PFFZZ	61888	01103-06055	BOLT, MACHINE	2
	21	PFFZZ	61888	02010-00006	WASHER, LOCK.....	2

END OF FIGURE

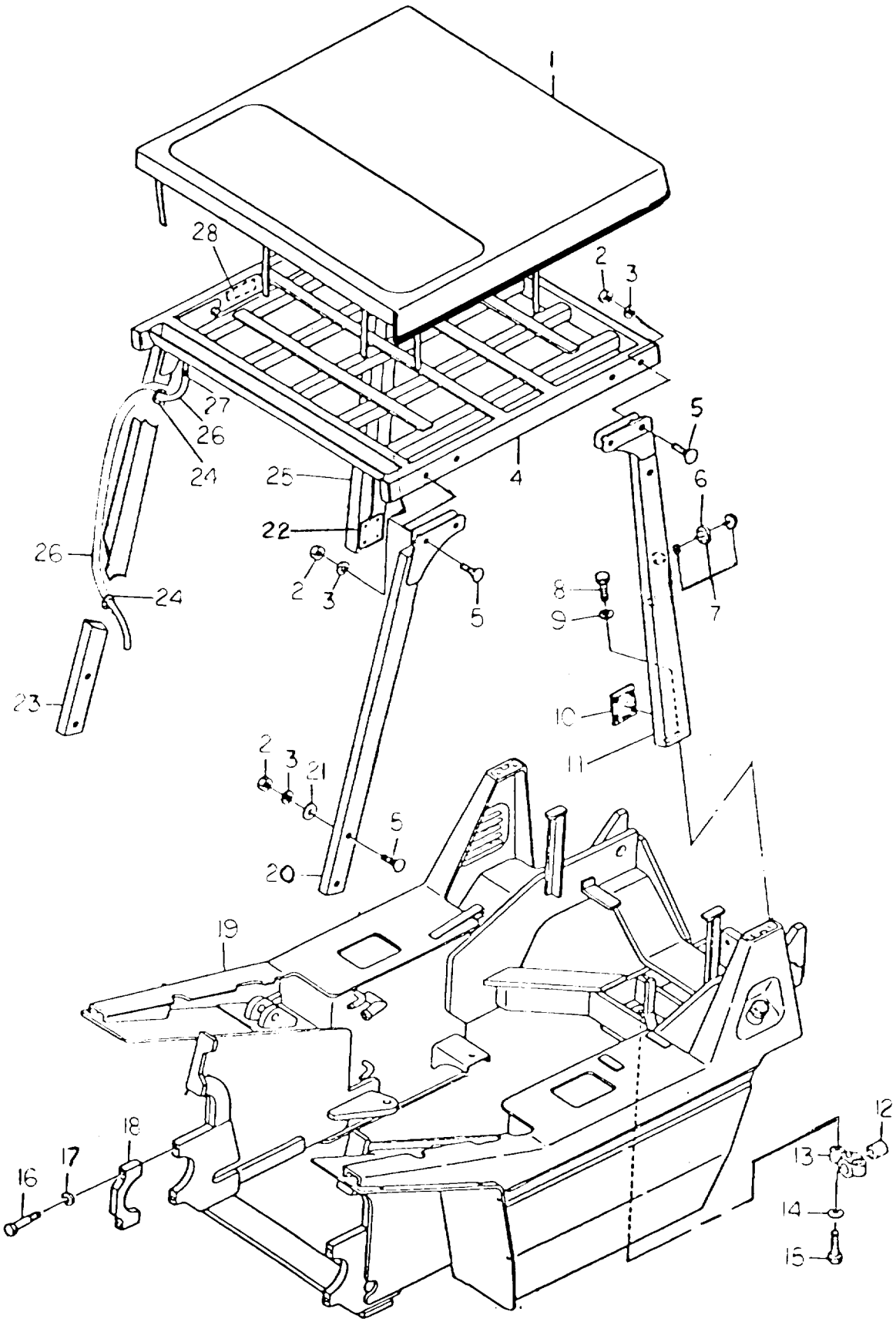

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FIGURE 71. FRAME AND OVERHEAD GUARD ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 15 FRAME	
				GROUP 1501 FRAME ASSEMBLY	
				FIG. 71 FRAME AND OVERHEAD GUARD ASSEMBLY	
1	PFOZZ	61888	53655-02001	COVER, ROPS	1
2	PAFZZ	61888	01400-00012	NUT, PLAIN, HEXAGON	12
3	PAFZZ	61888	02010-00012	WASHER LOCK.,,	12
4	PFFZZ	61888	53655-10201	OVERHEAD GUARD	1
5	PAFZZ	61888	53655-12291	BOLT, SQUARE NECK	12
6	PFOZZ	61888	23079-32001	HOLDER REFLECTOR	2
7	PFOZZ	61888	20229-10993	REFLECTOR, INDICAT	2
8	PAOZZ	61888	01100-12030	BOLT, MACHINE	4
9	PAOZZ	61888	02010-00012	WASHER, LOCK	4
10	PFOZZ	61888	53655-12321	COVER, ACCESS	1
11	PFFZZ	61888	53655-10412	FULCRUM, OVERHEAD G	1
12	PFFZZ	61888	23656-12621	BUSHING, SLEEVE	2
13	PFFZZ	61888	22216-10262	BRACKET, EYE, NON	2
14	PFFZZ	61888	02010-00020	WASHER, LOCK	4
* 15	XDFZZ	61888	01100-20080	BOLT, MACHINE	4
16	PFFZZ	61888	01100-16065	BOLT, MACHINE	4
17	PFFZZ	61888	02010-00016	WASHER, LOCK	4
* 18	PFFZZ	61888	22018-30064	CLAMP, RIM CLINCH	2
19	XAFHH	61888	78260-69333	FRAME.	1
20	PFFZZ	61888	78260-69322	STAY L.H. FRONT	1
21	PAFZZ	61888	22191-02011	WASHER, FLAT	4
22	PFOZZ	61888	53655-12331	COVER, ACCESS	1
23	PFFZZ	61888	78260-69331	FULCRUM, OVERHEAD G	1
24	PFOZZ	61888	23652-42081	GROMMET, NONMETAL	4
25	PFFZZ	61888	53655-10402	BRACKET, DOUBLE ANG	1
26	PFOZZ	61888	04720-10140	HOSE, NONMETALLIC	1
27	PFOZZ	61888	22192-22091	COUPLING BODY, TUBE	1
* 28	XDOZZ	61888	23329-12051	DECAL	1

END OF FIGURE

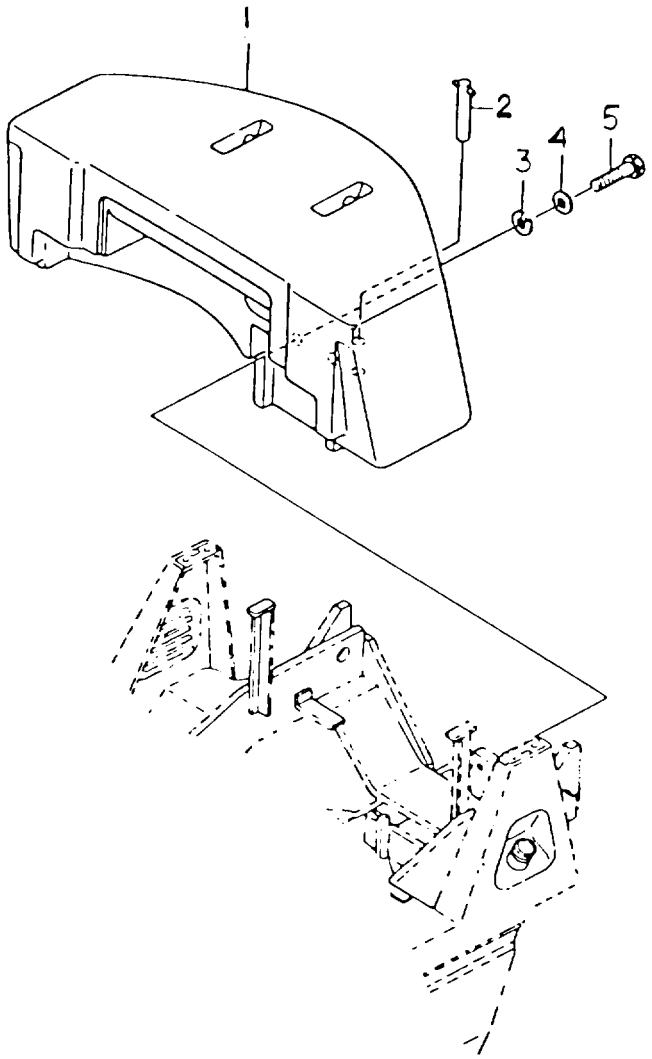

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FIGURE 72. COUNTER WEIGHT

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 1502 COUNTERWEIGHT	
				FIG. 72 COUNTERWEIGHT	
1	XAOZZ	61888	24459-32001	COUNTER WEIGHT	1
2	PFOZZ	61888	22676-32041	PIN, STRAIGHT, HEADED.	1
3	PFOZZ	61888	02010-00030	WASHER, LOCK.....	2
* 4	XDOZZ	61888	22216-30051	WASHER, FLAT.....	2
5	PFOZZ	61888	01110-30180	BOLT, MACHINE	2

END OF FIGURE

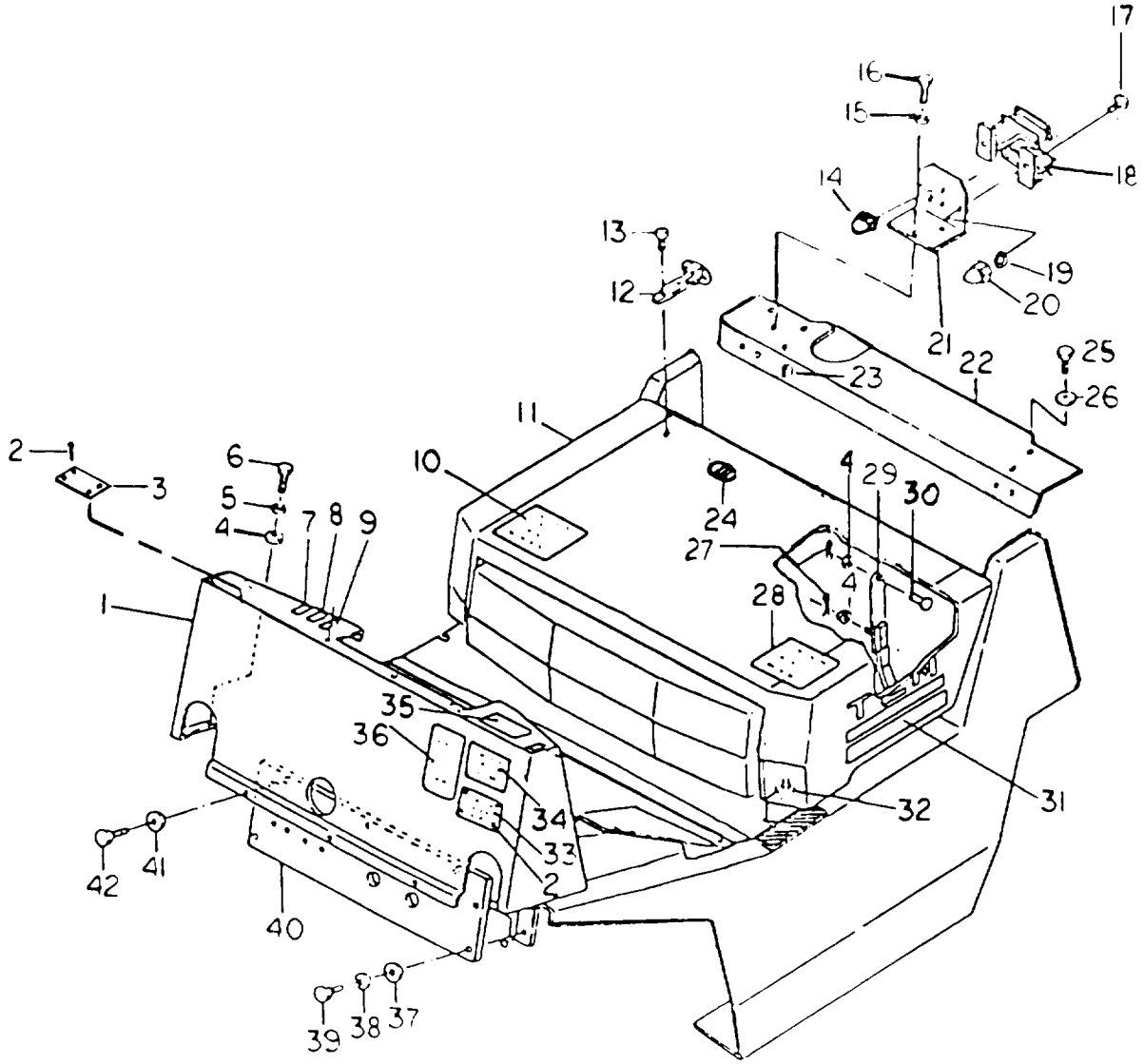

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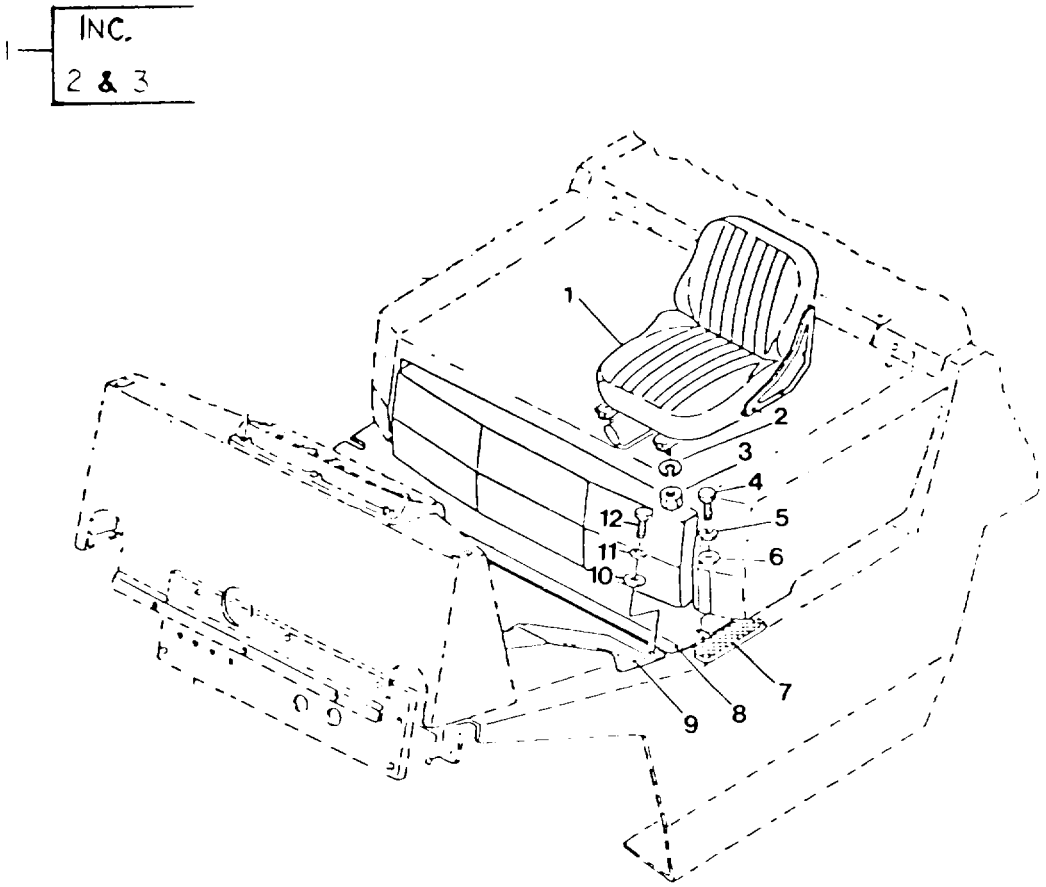
FIGURE 73. HOOD, COWL & DASH PANEL

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 18 BODY, CAB, HOOD	
					GROUP 1801 BODY, CAB, HOOD	
					FIG. 73 HOOD, COWL & DASH PANEL	
*	1	PFFZZ	61888	78260-69319	INSTRUMENT PANEL, TR	1
	2	PAFZZ	61888	02432-01008	RIVET, TUBULAR	8
	3	PFFZZ	61888	78260-69690	PLATE, INSTRUCTION	1
*	4	PFFZZ	15526	125ST-M10	WASHER, FLAT	6
	5	PFFZZ	61888	02010-00010	WASHER, LOCK	4
	6	PFFZZ	61888	01100-10020	BOLT, MACHINE	4
*	7	XDFZZ	61888	63110-18281	DECAL	1
*	8	XDFZZ	61888	27919-12201	DECAL	1
*	9	XDFZZ	61888	27919-12191	DECAL	1
	10	PFFZZ	61888	78260-69341	DECAL	1
	11	PFFZZ	61888	23656-40401	COVER, ACCESS	1
	12	PFOZZ	61888	24356-40601	HINGE, TEE	2
*	13	PAOZZ	61888	23656-42331	SCREW, CAP, SOCKET HE	8
	14	PFOZZ	61888	78260-69327	NUT, PLAIN, CAP	2
*	15	PFOZZ	15526	125ST-M10	WASHER, FLAT	4
	16	PFOZZ	61888	01109-10025	BOLT, MACHINE.*	2
	17	PFOZZ	61888	01100-08015	BOLT, MACHINE	2
	18	PFOZZ	61888	78247-28204	GUARD, LAMP	1
*	19	PFOZZ	96906	MS35340-45	WASHER, LOCK	4
	20	PFOZZ	61888	78260-69328	CROWN NUT	2
	21	PFOZZ	61888	78260-69323	BRACKET, ANGLE	1
	22	PFOZZ	61888	78260-69324	BRACKET, ANGLE	1
	23	PFOZZ	61888	22252-42121	GROMMET, NONMETAL	1
	24	XDFZZ	61888	23659-12101	DECAL, L. LIFE COOL	1
	25	PFOZZ	61888	01109-10020	BOLT, MACHINE	4
	26	PFOZZ	61888	02000-10010	WASHER, FLAT	2
	27	PFOZZ	96906	MS24665-368	PIN, COTTER	2
*	28	XDFZZ	61888	22859-12031	DECAL	1
*	29	XDOZZ	61888	23656-42491	CONNECTING, LINK, RI	1
	30	PFOZZ	61888	02262-10025	PIN, STRAIGHT, HEA	1
	31	XDFZZ	61888	78260-69344	DECAL, TCM MODEL	2
	32	PAFZZ	61888	23456-42181	MOUNT, RESILIENT	2
	33	PFFZZ	61888	78260-69342	PLATE, IDENTIFICATIO.	1
	34	PFFZZ	61888	09210-10200	PLATE, IDENTIFICATIO	1
	35	XDFZZ	61888	78260-69340	DECAL, WARRANTY	1
*	36	XDFZZ	61888	52672-72121	DECAL	1
	37	PFFZZ	61888	02000-00012	WASHER, FLAT	4
	38	PFFZZ	61888	02011-00012	WASHER, LOCK	4
	39	PFFZZ	61888	01103-12035	BOLT, MACHINE	4
*	40	PFFZZ	61888	24456-40201	PLATE, MOUNTING	1
	41	PFFZZ	61888	23656-42601	WASHER, FLAT	3
	42	PFFZZ	61888	23656-42351	BOLT, MACHINE	3

END OF FIGURE

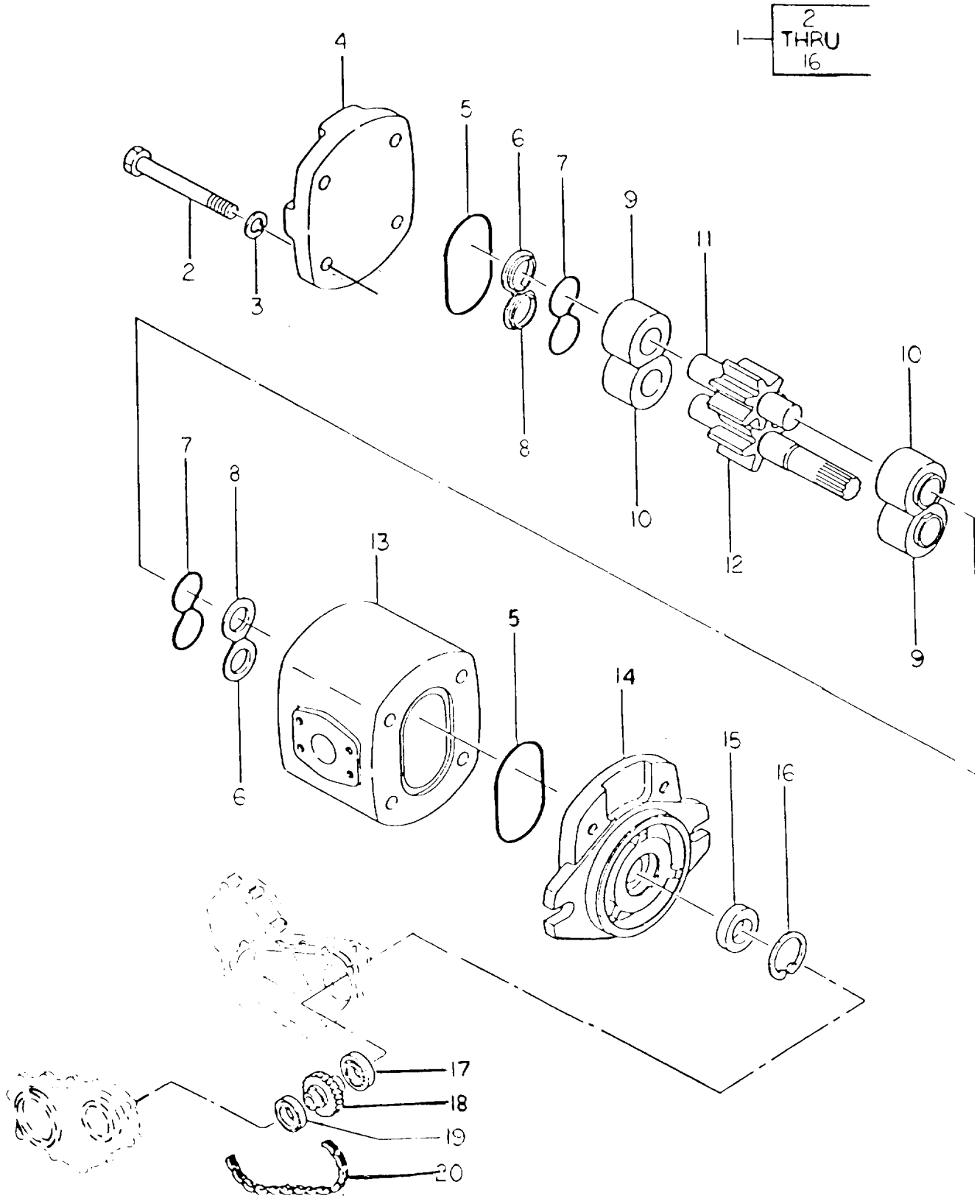


TA265204

FIGURE 74. FLOOR BOARD & SEAT

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 1805 FLOORS AND RELATED COMPONENTS	
				FIG. 74 FLOOR BOARD & SEATS	
* 1	PFOZZ	61888	24846-80302	SEAT, VEHICULAR	1
* 2	PFOZZ	96906	MS35340-45	.WASHER, LOCK	2
3	PFOZZ	61888	01400-00008	.NUT, PLAIN, HEXAGON	4
4	PFOZZ	61888	01100-10016	BOLT, MACHINE	2
5	PFOZZ	61888	02010-00010	WASHER, LOCK	2
6	PFOZZ	61888	22252-32251	WASHER, FLAT	2
7	PFOZZ	61888	22679-12032	MAT, FLOOR	1
8	PFOZZ	61888	23656-50201	FLOORBOARD, CAB, VE	1
9	PFOZZ	61888	24466-50201	FLOORBOARD, FRONT	1
* 10	PFOZZ	15526	125ST-M10	WASHER, FLAT	4
11	PFOZZ	61888	02010-00010	WASHER, LOCK	4
12	PFOZZ	61888	01100-10020	BOLT, MACHINE	4

END OF FIGURE



TA265205

FIGURE 75. HYDRAULIC OIL PUMP ASSEMBLY

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 24 HYDRAULIC AND FLUID SYSTEM	
					GROUP 2401 HYDRAULIC PUMP	
					FIG. 75 HYDRAULIC OIL PUMP ASSEMBLY	
	1	PFFFF	61888	14437-10201	PUMP, ASSEMBLY, OIL.....	1
	2	PFFZZ	61888	B-20121-31293	.BOLT.....	4
	3	PFFZZ	61888	02010-00010	.WASHER1LOCK.....	4
	4	XAFZZ	61888	99999-01027	.COVER.....	1
*	5	KFFZZ	61888	B-20121-30801	.SEAL,BODY PART OF KIT P/N 13657-19801	2
*	6	KFFZZ	61888	B20121-31001	.RING, RH. BACKING PART OF KIT P/N 13657-19801.....	2
*	7	KFFZZ	61888	B-20121-30901	.SEAL, BUSHING PART OF KIT P/N 13657-19801	2
*	8	KFFZZ	61888	B-20121-31101	.RING, L.H. BACKING PART OF KIT P/N 13657-19801	2
	9	XAFZZ	61888	99999-01029	.BUSHING.....	1
	10	XAFZZ	61888	99999-01030	.BUSHING.....	1
	11	XAFZZ	61888	99999-01032	.GEAR, DRIVEN.....	1
	12	XAFZZ	61888	99999-01031	.GEAR, DRIVE	1
	13	XAFZZ	61888	99999-01028	.BODY	1
*	14	XDFZZ	61888	B-20121-30720	.PLATE, RETAINING, SHA,.....	1
*	15	KFFZZ	61888	B-20121-31401	.SEAL, OIL PART OF KIT P/N 13657-19801.....	1
*	16	KFFZZ	61888	02110-00032	.RING, SNAP PART OF KIT P/N 13657-19801	1
*	17	PFFZZ	55883	IDP4M1833	BEARING, BALL, ANNULA.....	1
	18	PFFZZ	61888	N-12353-L1101	SPROCKET, WHEEL.....	1
	19	PFFZZ	61888	N-12354-L6801	BEARING, BALL, THRU	1
	20	PFFZZ	61888	N-12352-L11O1	CHAIN, SILENT.....	1

END OF FIGURE

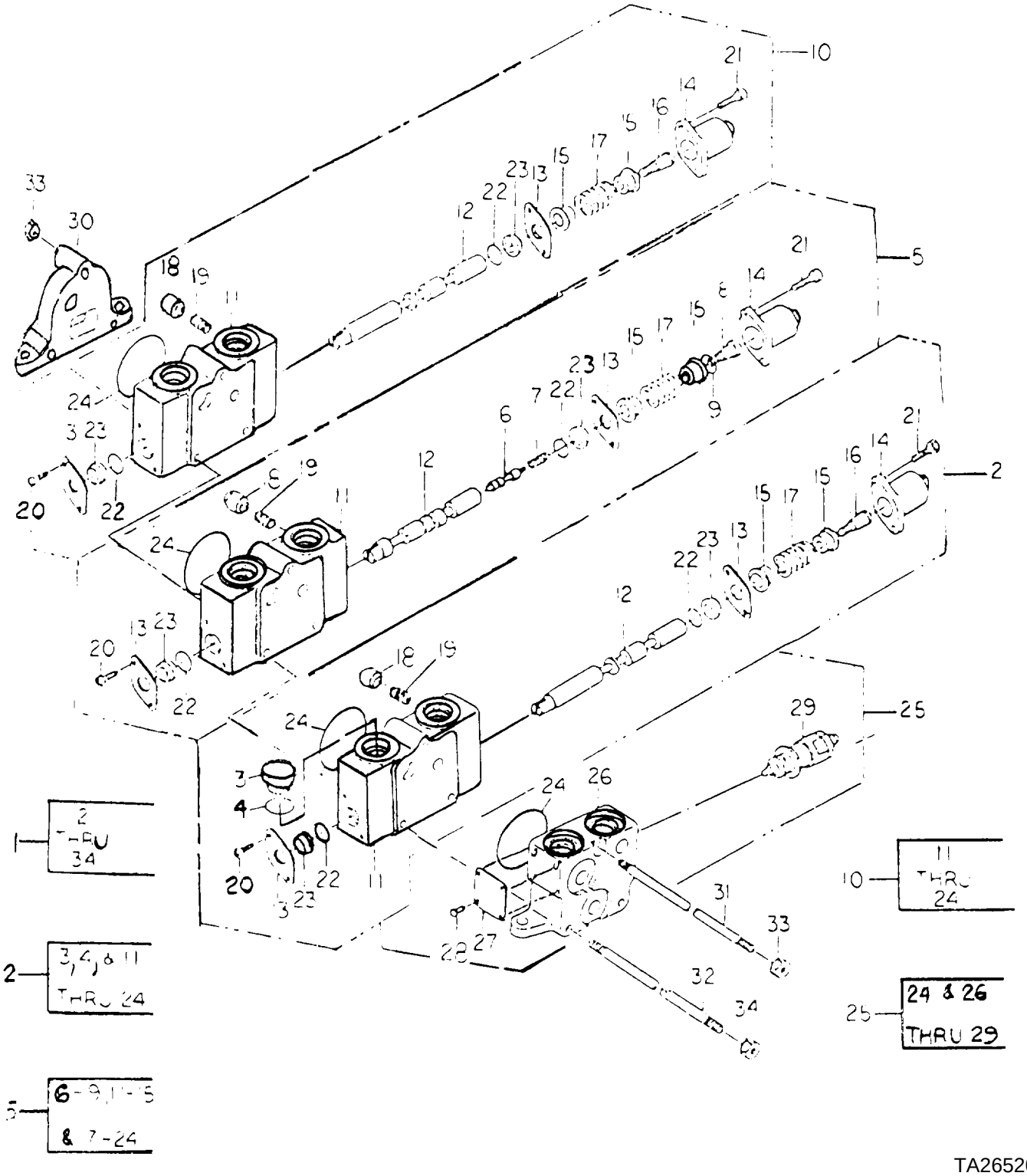
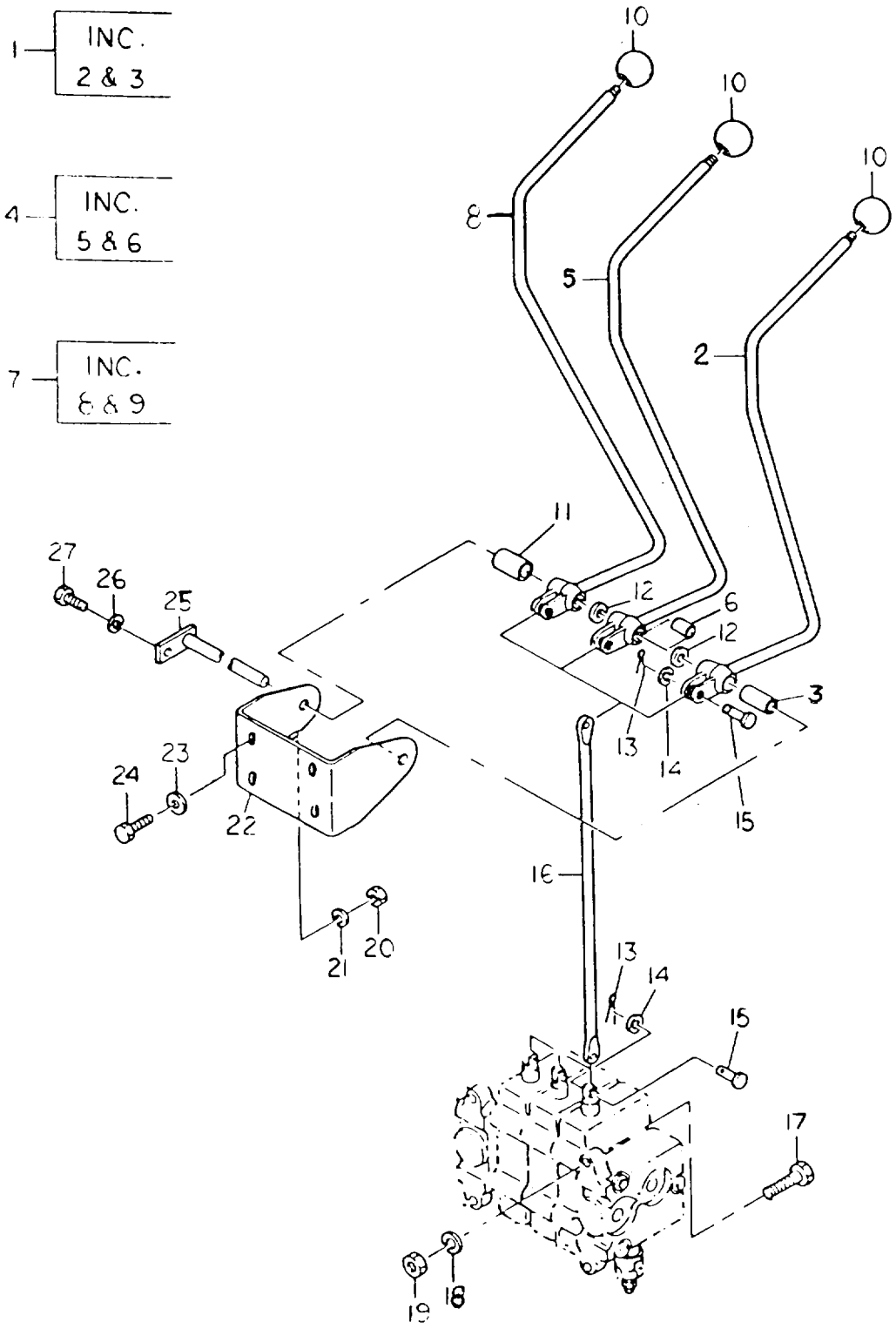


FIGURE 76. HYDRAULIC CONTROL VALVE ASSEMBLY

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 2402 HYDRAULIC CONTROL VALVE	
					FIG. 76 HYDRAULIC CONTROL VALVE ASSEMBLY	
*	1	PFFZZ	61888	23657-32301	VALVE, LINEAR, DIRECT	1
	2	PFHHH	61888	B-21013-31750	.VALVE, LINEAR, DIRECT	1
	3	PFHZZ	61888	B-21001-00128	..PLUG, PIPE	1
*	4	KFHZZ	61888	B-21001-00035	..O-RING PART OF KIT P/N 22197-39802	1
	5	PFHHH	61888	B-21013-31380	.VALVE, LINEAR, DIRECT	1
	6	XAHZZ	61888	99999-01035	..VALVE	1
	7	PFHZZ	61888	B-21011-30618	..SPRING, HELICAL, COMP	1
	8	PFHZZ	61888	B-21011-30528	..SCREW, CAP, HEXAGON H	1
*	9	KFHZZ	61888	B-95133-00500	..O-RING PART OF KIT P/N 22197-39802	1
	10	PFHHH	61888	B-21013-30151	.VALVE, LINEAR, DIRECT	1
	11	XAHZZ	61888	99999-01033	..HOUSING, VALVE	3
	12	XAHZZ	61888	99999-01034	..PLUNGER	3
	13	PFHZZ	61888	B-21011-31702	..RETAINER PACKING	6
	14	PFHZZ	61888	B-21011-31011	..CAP, VALVE	3
	15	PFHZZ	61888	B-21011-30702	..SEAT, HELICAL COMPR	6
	16	PFHZZ	61888	B-21011-30507	..SCREW, CAP, HEXAGON H	2
	17	PFHZZ	61888	B-21011-30603	..SPRING, HELICAL, COMP	3
	18	PFHZZ	61888	B-21011-32404	..POPPET, VALVE, HYDR	3
	19	PFHZZ	61888	B-21011-30604	..SPRING, HELICAL COMP	3
	20	PFHZZ	61888	01000-06010	..SCREW, MACHINE	6
	21	PFHZZ	61888	01170-06018	..BOLT, MACHINE	6
*	22	KFHZZ	61888	B-21001-00689	..O-RING PART OF KIT P/N 22197-39802	6
*	23	KFHZZ	61888	B-21011-32801	..WIPER PART OF KIT P/N 22197-39802	6
*	24	KFHZZ	61888	B-21001-00106	..O-RING PART OF KIT P/N 22197-39802	4
	25	PFHHH	61888	B-21013-30011	.VALVE, LINEAR, DIRECT	1
	26	XAHZZ	61888	99999-01036	..HOUSING, INLET	1
	27	XAHZZ	61888	99999-01037	..PLATE, NAME	1
	28	XAHZZ	61888	99999-01038	..SCREW, DRIVE NPL	4
	29	PFHZZ	61888	63130-25175	..RELIEF VALVE	1
	30	PFHZZ	61888	B-21011-30104	.COVER, HYDRAULIC, PUM	1
	31	PFHZZ	61888	B-21031-30103	.STUD, PLAIN	1
	32	PFHZZ	61888	B-21031-30104	.STUD, PLAIN	2
	33	PFHZZ	61888	B-93128-10082	.NUT, PLAIN, HEXAGON.	2
	34	PAHZZ	61888	B-93118-08652	.NUT, PLAIN, HEXAGON	4

END OF FIGURE

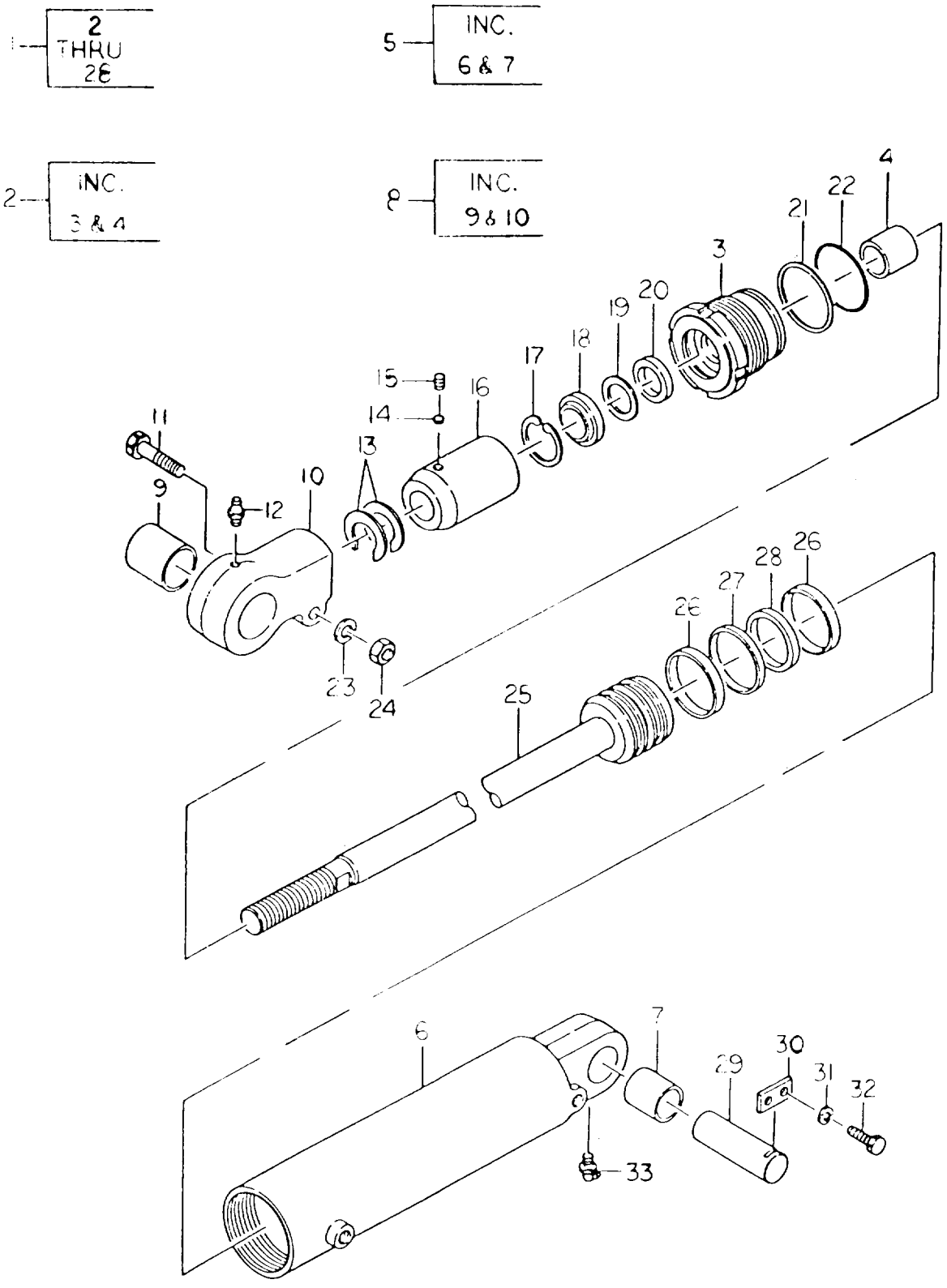


TA265207

FIGURE 77. HYDRAULIC CONTROL LEVER & LINKAGE

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 2403 HYDRAULIC CONTROL LEVERS AND LINKAGE	
					FIG. 77 HYDRAULIC CONTROL LEVER t LINKAGE	
	1	PFFZZ	61888	23657-40202	LEVER, MANUAL CON.....	1
*	2	XDFZZ	61888	23657-42002	.LEVER, MANUAL CONTRO.	1
	3	PFFZZ	61888	23457-42101	.BUSHING, SLEEVE.....	3
*	4	PFFZZ	61888	23657-40212	CONNECTING LINK, ASS.....	1
	5	XAFZZ	61888	23657-42022	.LEVER, TILT	1
	6	PFFZZ	61888	23457-42101	.BUSHING, SLEEVE.....	1
*	7	XDFZZ	61888	23657-40222	LEVER, MANUAL CONTRO.....	1
	8	XAFZZ	61888	23657-42042	.LEVER, THIRD.....	1
	9	PFFZZ	61888	23457-42101	.BUSHING, SLEEVE.....	1
	10	PAOZZ	61888	22117-40032	KNOB	3
	11	PFOZZ	61888	23657-42131	SPACER, SLEEVE..... .	1
*	12	PFOZZ	61888	22517-40051	SPACER, SLEEVE.....	V
	13	PFOZZ	61888	02200-16010	PIN, COTTER	6
	14	PFOZZ	62983	471060	WASHER, FLAT.....	6
	15	PFOZZ	61888	22717-40061	PIN, STRAIGHT, HEAD	6
*	16	PFOZZ	61888	23657-42081	TUBE, METALLIC	3
	17	PFFZZ	61888	01100-10040	BOLT, MACHINE	3
	18	PFFZZ	61888	02010-00010	WASHER, LOCK.....	3
	19	PFFZZ	61888	01400-00010	NUT, PLAIN, HEXAGON	3
	20	PFOZZ	61888	01400-00008	NUT, PLAIN, HEXAGON	4
*	21	PFOZZ	96906	MS35340-45	WASHER, LOCK.....	4
	22	PFOZZ	61888	24847-42061	STRAP, RETAINING.....	1
*	23	XDOZZ	61888	02000-00008	WASHER, FLAT.....	8
	24	PFOZZ	61888	01100-08025	BOLT, MACHINE	4
	25	PFOZZ	61888	23457-42041	CONNECTING LINK, RI	1
	26	PFOZZ	61888	02010-00006	WASHER, LOCK.....	1
	27	PFOZZ	61888	01100-06012	BOLT, MACHINE	1

END OF FIGURE

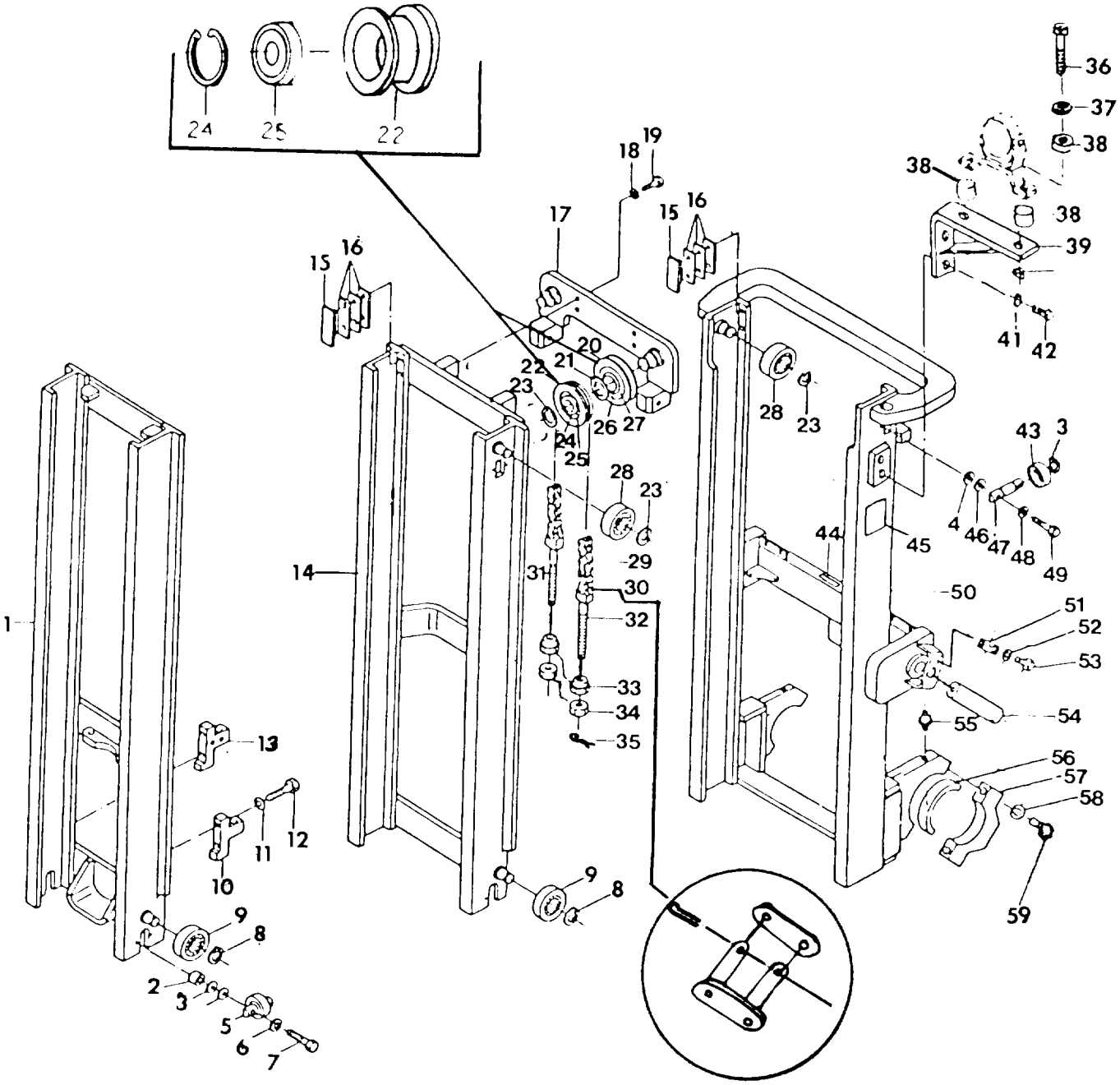


TA265208

FIGURE 78. HYDRAULIC TILT CYLINDERS

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 2404 TILT CYLINDER	
					FIG. 78 HYDRAULIC TILT CYLINDERS	
*	1	PFFFF	61888	24458-50011	CYLINDER ASSY R, H	1
	1	PFFFF	61888	24458-50111	CYLINDER ASSEMBLY, A	1
*	2	PFFZZ	61888	24458-50321	.CAP, LINEAR ACTUATIN	1
	3	XAFZZ	61888	24458-52041	..CAP, CYLINDER	1
	4	PFFZZ	61888	22678-52021	..SPACER, RING	1
*	5	PFFZZ	61888	24458-50301	.CYLINDER ASSEMBLY, A	1
	6	XAFZZ	61888	24458-50201	..CYLINDER	1
*	7	PFFZZ	61888	27738-22201	..BUSHING, SLEEVE	1
	8	PFFZZ	61888	23658-50351	.ROD END, THREADED	1
	9	PFFZZ	61888	23468-52101	..BUSHING, SLEEVE	1
	10	XAFZZ	61888	23658-52071	..ROD END	1
	11	PFFZZ	61888	01103-14055	.BOLT, MACHINE	1
	12	PFFZZ	61888	04901-00100	.FITTING, LUBRICATION	1
	13	PFFZZ	61888	23658-52101	.SHIM	3
	14	PFFZZ	61888	23658-52401	.INSERT, SELF-LOCKING	1
	15	PFFZZ	61888	01066-10012	.SETSCREW	1
	16	PFFZZ	61888	24458-52081	.SPACER, SLEEVE	1
	17	KFFZZ	61888	22678-52101	.RING, SNAP PART OF KIT P/N 24458-59811	1
	18	KFFZZ	61888	23658-52031	.SEAL, DUST PART OF KIT P/N 24458-59811	1
	19	KFFZZ	61888	23658-52061	.RING, BACK-UP PART OF KIT P/N 23658-59801 PART OF KIT P/N 23658-50341	1
	20	KFFZZ	61888	23658-52051	.PACKING PART OF KIT P/N 23658-59801 PART OF KIT P/N 23658-50341	1
	21	KFFZZ	61888	23658-52141	.RING, BACK-UP PART OF KIT P/N 24458-59811 PART OF KIT P/N 23658-59801	1
*	22	KFFZZ	61888	03350-00650	.O-RING PART OF KIT P/N 24458-59811	1
	23	PFFZZ	61888	02011-00014	.WASHER, LOCK	1
	24	PFFZZ	61888	01400-10014	.NUT, PLAIN, HEXAGON	1
	25	PFFZZ	61888	24458-50211	.PISTON, LINEAR ACTUA	1
	26	KFFZZ	61888	24458-52441	.WEARING PART OF KIT P/N 24458-59811	2
*	27	KFFZZ	61888	24458-52421	.RING, SLIPPER PART OF KIT P/N 24458-59811 PART OF KIT P/N 24458-50311	1
	28	KFFZZ	61888	24458-52431	.RING, BACK-UP PART OF KIT P/N 24458-59811 PART OF KIT P/N 24458-50311	1
	29	PFFZZ	61888	23458-52001	CONNECTOR, ROD END	2
*	30	XDFZZ	61888	23648-50161	CONNECTING LINK, RIG	2
	31	PFFZZ	61888	02010-00010	WASHER, LOCK	4
	32	PFFZZ	61888	01100-10020	BOLT, MACHINE	4
	33	PFFZZ	61888	04901-00190	FITTING, LUBRICAT	2

END OF FIGURE



TA265209

FIGURE 79. HYDRAULIC MAST ASSEMBLY

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 2405 MAST COLUMN	
					FIG. 79 HYDRAULIC MAST ASSEMBLY	
*	1	PFFZZ	61888	78260-69028	MAST SECTION	1
	2	PFFZZ	61888	23818-30071	SPACER, RING	12
	3	PAFZZ	61888	02100-00025	RING, RETAINING	2
	4	PAFZZ	61888	22548-34051	WASHER, FLAT V	
	5	PAFZZ	61888	23458-32051	BEARING, BALL, DUP	6
	6	PFFZZ	61888	02010-00012	WASHER, LOCK	12
	7	PFFZZ	61888	01100-12040	BOLT, MACHINE	12
	8	PAFZZ	61888	02100-00045	RING, RETAINING.	4
*	9	PAFZZ	61888	23458-22111	BEARING, BALL, ANNULA	4
*	10	XDFZZ	61888	24450-73441	BRACKET, EYE, NONROT	1
	11	PFFZZ	61888	02011-00016	WASHER, LOCK	4
	12	PFFZZ	61888	01103-16045	BOLT, MACHINE	4
	13	PFFZZ	61888	24450-73431	BRACKET, EYE NONROT	1
*	14	PFFZZ	61888	78260-69025	MAST, MIDDLE	1
	15	PAFZZ	61888	22678-32001	PLATE, SLIPPER	4
	16	PAFZZ	61888	22679-43231	SHIM V	
*	17	PFHZZ	61888	24450-70401	HEAD ASSEMBLY, PISTO	1
	18	PFFZZ	61888	02011-00020	WASHER, LOCK	4
	19	PFFZZ	61888	01103-20050	BOLT, MACHINE	4
	20	PFFZZ	61888	23650-73581	PULLEY, GROOVE	2
	21	PFFZZ	96906	MS16624-1255	RING, RETAINING	2
	22	PFFZZ	61888	23650-73611	SHEEVE, DIRECTIONAL	2
	23	PFFZZ	61888	02100-00040	RING, RETAINING	6
	24	PFFZZ	61888	02110-00090	RING, RETAINING	2
*	25	PFFZZ	61888	03042-06308	BEARING, ROLLER	2
	26	PFFZZ	61888	02110-00100	RING, RETAINING	2
*	27	PFFZZ	61888	03040-06013	BEARING, ROLLER	2
	28	PAFZZ	61888	23658-33001	BEARING, BALL, ANNULA	4
*	29	PFFFF	61888	22438-45651	CHAIN, LEAF	2
	30	PFFZZ	61888	22438-43001	.LINK, ROLLER CHAIN	4
	31	PFFZZ	61888	24459-42391	PIN, CHAIN ANCHOR	2
	32	PFFZZ	61888	24459-42381	CONNECTING LINK, RI	2
	33	PFFZZ	61888	22218-40191	NUT, SELF-LOCKING	4
	34	PFFZZ	61888	01400-00018	NUT, PLAIN, HEXAGON.,.,	4
	35	PFFZZ	96906	MS24665-359	PIN, COTTER,	4
	36	PFOZZ	61888	01100-10050	BOLT, MACHINE	2
	37	PFOZZ	61888	22252-32251	WASHER, FLAT	2
*	38	PFOZZ	61888	22252-32241	BUSHING, NONMETALLIC	4
	39	PFOZZ	61888	78260-69329	BRACKET, ANGLE	1
	40	PFOZZ	61888	23651-02011	NUT, SELF-LOCKING HE	2
	41	PFOZZ	61888	02010-00010	WASHER, LOCK	2
	42	PFOZZ	61888	01100-10025	BOLT, MACHINE	2
	43	PAFZZ	61888	22578-22401	BEARING. BALL, THRU	2
*	44	XDOZZ	61888	22519-10291	DECAL	1
*	45	XDOZZ	61888	78260-69021	PLATE IDENTIFICATIO	1
	46	PAFZZ	61888	22548-34061	SPACER SLEEVE V	
*	47	XDFZZ	61888	22548-34021	SHAFT, SHOULDERED	2
	48	PAFZZ	61888	02011-00012	WASHER, LOCK	4

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
	49	PAFZZ	61888	01103-12035	BOLT, MACHINE	4
*	50	PFFZZ	61888	78260-69022	MAST, OUTER	1
*	51	XDFZZ	61888	23648-50161	CONNECTING LINK, RIG	2
	52	PFFZZ	61888	02010-00010	WASHER, LOCK .	4
	53	PFFZZ	61888	01100-10020	BOLT, MACHINE.	4
	54	PFFZZ	61888	23658-02001	CONNECTOR, ROD END	2
	55	PFOZZ	61888	04901-00160	FITTING, LUBRICATION	2
*	56	PAFZZ	61888	22518-30031A	BUSHING, SLEEVE	2
	57	PFFZZ	61888	22018-30064	CLAMP, RIM CLINCH	2
	58	PFFZZ	61888	02010-00016	WASHER, LOCK	4
	59	PFFZZ	61888	01100-16065	BOLT, MACHINE	4

END OF FIGURE

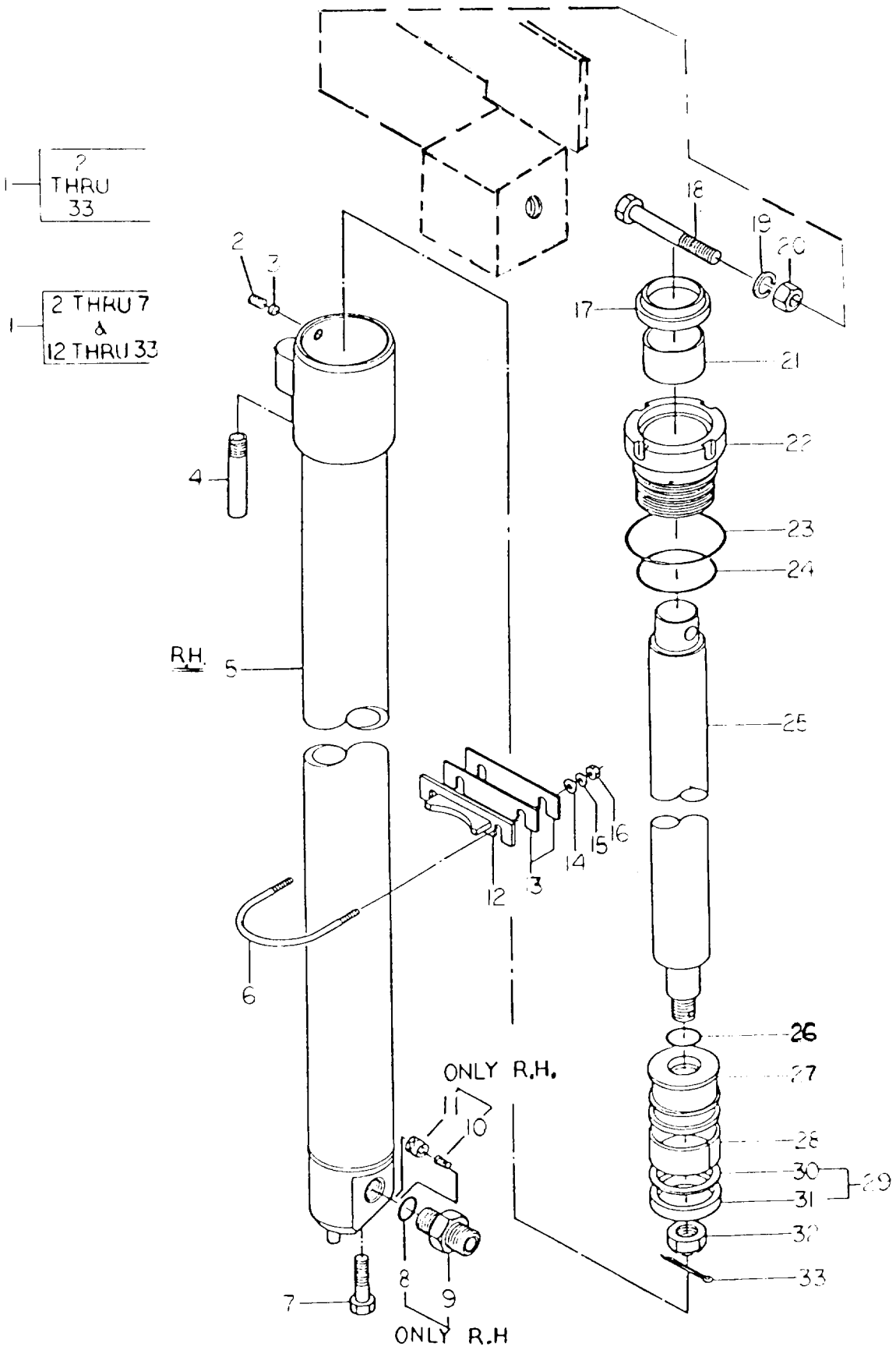


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FIGURE 80. LIFT CYLINDER ASSEMBLY, REAR

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 2405 MAST COLUMN	
					FIG. 80 LIFT CYLINDER ASSEMBLY, REAR	
	1	PFFHH	61888	78260-69037	CYLINDER ASSEMBLY, A.....	1
	1	PFFHH	61888	78260-69038	CYLINDER ASSEMBLY, A.....	1
	2	PFFZZ	61888	22298-40111	.SETSCREW.....	2
	3	PFFZZ	12603	662634	.PLUG,FITTING , ...	2
	4	PFOZZ	61888	04921-02005	.ADAPTER1STRAIGHT	2
	5	PFFZZ	61888	78260-69039	.CYLINDER,ACTUATING, ...	1
	5	PFFZZ	61888	78260-69040	.CYLINDER ,ACTUATING, ...	1
	6	PFFZZ	61888	24459-43441	.BOLT, U	2
	7	PFFZZ	61888	23659-44581	.SCREW, EXTERNALLY	2
	8	PFFZZ	61888	03320-00180	.PACKING, PREFORMED	1
	9	PFFZZ	61888	24459-42311	.NIPPLE, TUBE.....*	1
	10	PFFZZ	61888	27978-42601	.SPRING, HELICAL, COMP.....	1
	11	PFFZZ	61888	78260-69238	.VALVE, PLUG.....	1
	12	PFFZZ	61888	24849-42281	.SUPPORT, CYLINDER.....	2
	13	PFFZZ	61888	27978-32581	.SHIM	
*	14	PAFZZ	15526	125ST-M10	.WASHER, FLAT.....	4
	15	PFFZZ	61888	02010-00010	.WASHER, LOCK.....	4
	16	PFFZZ	61888	01400-00010	.NUT, PLAIN, HEXAGON	4
	17	KFFZZ	61888	24459-42271	.SEAL, DUST PART OF KIT P/N 24459-..... 49801	2
	18	PFFZZ	61888	01100-12080	.BOLT, MACHINE	2
	19	PFFZZ	61888	02010-00012	.WASHER LOCK.....	2
	20	PFFZZ	61888	01400-00012	.NUT ,PLAIN, HEXAGON	2
	21	PFFZZ	61888	22578-42021	.BUSHING, SLEEVE.....	2
	22	PFFZZ	61888	24459-42261	.CAP LINEAR ACTUAT	2
	23	KFFZZ	61888	03300-00700	.O-RING PART OF KIT P/N 24459-49801.....	2
	24	KFFZZ	61888	03350-00600	.O-RING PART OF KIT P/N 24459-49801.....	2
	25	PFFZZ	61888	78260-69018	.PISTON, LINEAR ACTUA.....1	2
	26	KFFZZ	61888	03320-00250	.O-RING PART OF KIT P/N 24459-49801,.....	2
	27	PFFZZ	61888	57915-52322	.PISTON, LINEAR ACTUA.....	2
	28	KFFZZ	61888	27978-42421	.WEARING PART OF KIT P/N 24459-49801	2
	29	PFFZZ	61888	24459-43401	.PACKING ASSEMBLY PART OF KIT P/N..... 24459-49801	2
	30	KFFZZ	61888	24459-42291	..RING, BACK-UP PART OF KIT P/N 24459 -49801	2
	31	KFFZZ	61888	27978-42411	..PACKING PART OF KIT P/N 24459- 49801	2
*	32	PFFZZ	61888	22674-3211	.NUTVPLAIN1CASTELLAT	2
	33	KFFZZ	61888	02200-04036	.PIN, COTTER PART OF KIT P/N 24459-..... 49801	2

END OF FIGURE

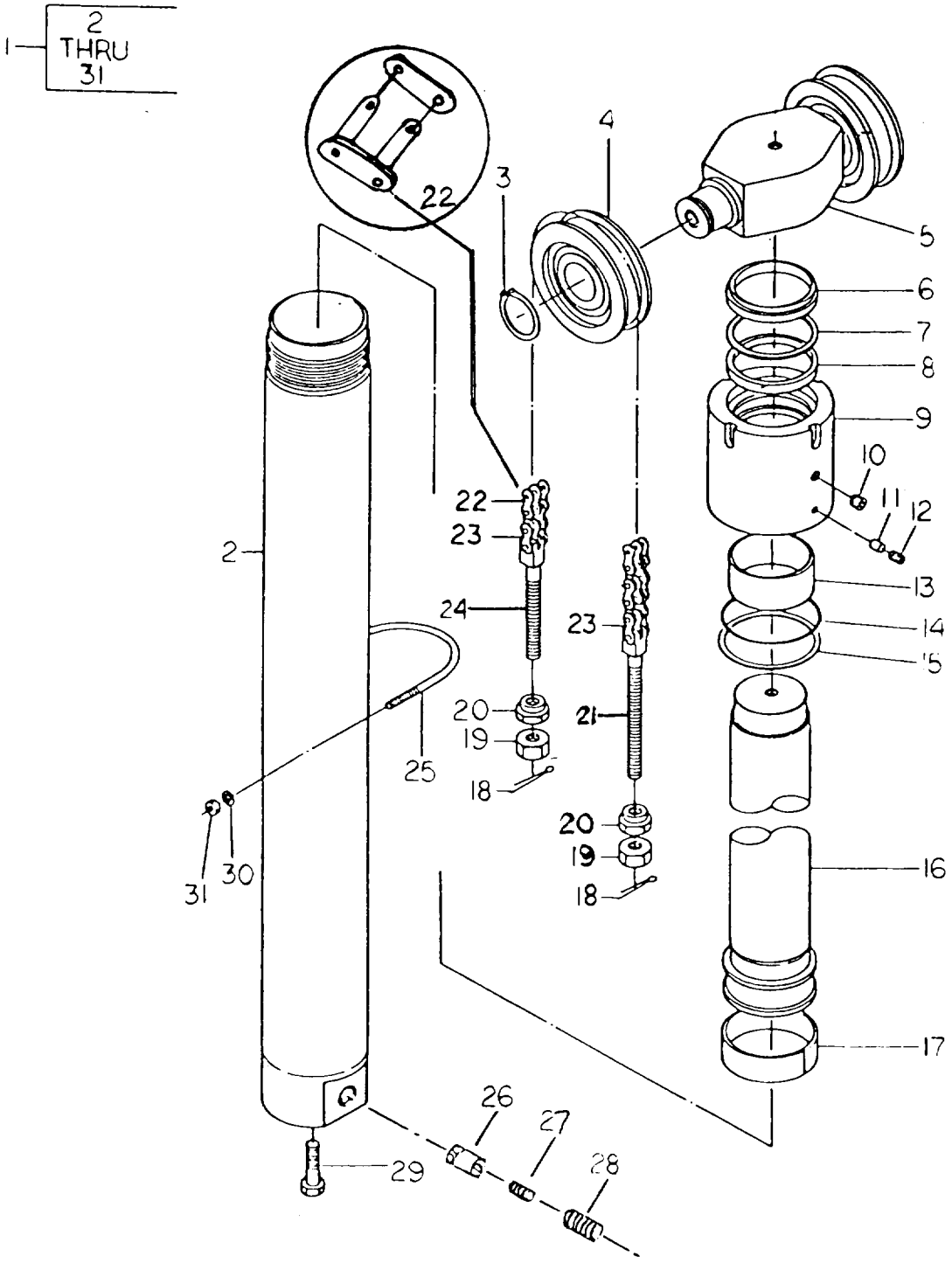

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FIGURE 81. LIFT CYLINDER ASSEMBLY, FRONT

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 2405 MAST COLUMN	
					FIG. 81 LIFT CYLINDER ASSEMBLY, FRONT	
*	1	PFFFF	61888	78260-69032	CYLINDER ASSEMBLY, A,	1
	2	PFFZZ	61888	78260-69033	.CYLINDER,ACTUATING	1
*	3	PAFZZ	61888	02100-00040	.RING, RETAINING	2
*	4	XDFZZ	61888	23659-44842	.BEARING,BALL,THR	2
	5	PFFZZ	61888	23650-82501	.HEAD, LINEAR ACTUAT	1
	6	KFFZZ	61888	24450-82231	.SEAL, DUST PART OF KIT P/N 24450-89801	1
	7	KFFZZ	61888	24450-82251	.RING,BACK-UP PART OF KIT P/N 24450-89801	1
	8	KFFZZ	61888	24450-82241	.PACKING PART OF KIT P/N 24450-89801	1
	9	PFFZZ	61888	24450-82221	.SLEEVE,DIRECTIONAL	1
	10	PFFZZ	61888	23870-52871	.PLUG, MACHINE THRE	1
	11	PFFZZ	12603	662634	.PLUG FITTING	1
	12	PFFZZ	61888	22298-40111	.SETSCREW	1
	13	PFFZZ	61888	23910-22111	.BUSHING, SLEEVE	1
	14	KFFZZ	61888	24450-82291	.O-RING PART OF KIT P/N 24450-89801	1
	15	KFFZZ	61888	24450-82281	.RING BACK-UP PART OF KIT P/N 24450-89801	1
	16	PFFZZ	61888	78260-69016	.PISTON COMPRESSOR	1
	17	PFFZZ	61888	23918-52131	.SPACER, RING	1
*	18	XDFZZ	61888	02200-03040	.PIN, COTTER	4
	19	PFFZZ	61888	01400-00018	.NUT, PLAIN, HEXAGON	4
	20	PFFZZ	61888	22218-40191	.NUT, SELF-LOCKING.	4
	21	PFFZZ	61888	24459-42381	.CONNECTING LINK, RI	2
*	22	PFFFF	61888	22438-45511	.CHAIN, LEAF	2
	23	PFFZZ	61888	22438-43001	..LINK ROLLER CHAIN,	4
	24	PFFZZ	61888	24459-42391	.PIN CHAIN ANCHOR	2
	25	PFFZZ	61888	24450-82401	.BOLT,U	1
	26	PFFZZ	61888	78247-28320	.PIN, PISTON	1
	27	PFFZZ	61888	24230-52701	.SPRING, HELICAL, COMP	1
	28	PFFZZ	61888	24230-82071	.RETAINER, SPRING	1
	29	PFFZZ	61888	23659-44581	.SCREW, EXTERNALLY	1
	30	PFFZZ	61888	02010-00010	.WASHER,LOCK	2
	31	PFFZZ	61888	01400-00010	.NUT, PLAIN, HEXAGON	2

END OF FIGURE

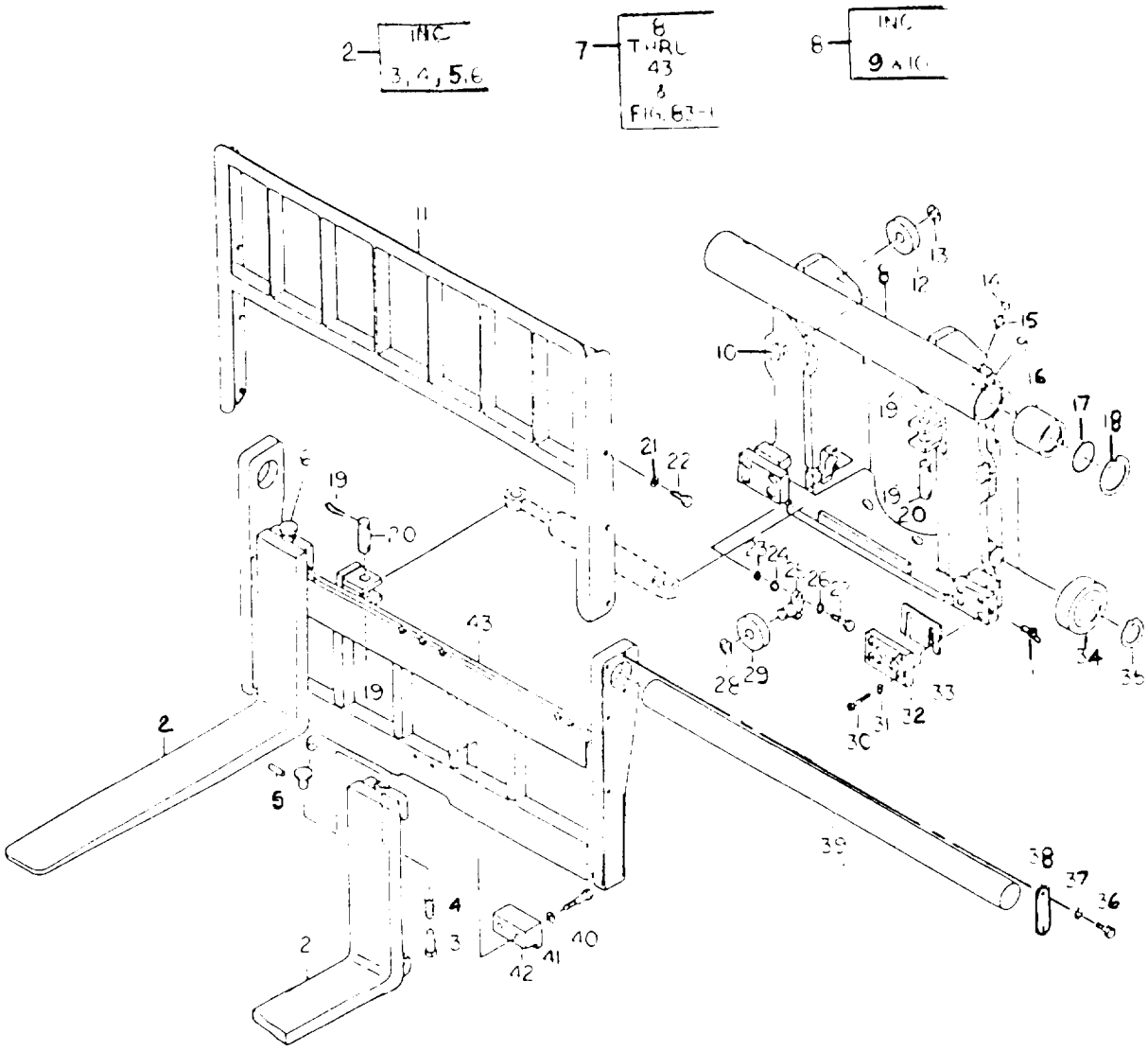

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FIGURE 82. SIDE SHIFTER & FORK ASSEMBLY

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 2405 MAST COLUMN	
					FIG.82 SIDE SHIFTER & FORK ASSEMBLY	
	1	PFFZZ	61888	04901-00100	FITTING,LUBRICATION	2
	2	PFFZZ	61888	78260-69012	FORK, LIFT TRUCK	2
	3	KFFZZ	61888	24358-12111	.STOPPER	2
	4	KFFZZ	61888	22198-12051	.SPRING	2
	5	KFFZZ	61888	02270-04032	.PIN,LOCK	2
	6	KFFZZ	61888	78260-69232	.HANDLE	2
*	7	PFFZZ	61888	78260-69001	SIDE RACK SET,VEHIC	1
	8	PFFZZ	61888	78260-69002	.BRACKET ASSEMBLY	1
	9	PFFZZ	61888	23460-72231	..ROLLER,LINEAR-ROT	4
*	10	XDFZZ	61888	23658-22041	..CAM,CONTROL	2
	11	PFOZZ	61888	78260-69220	.BACKREST,SUPPORT	1
	12	PFFZZ	61888	22578-22401	.BEARING, BALL,THRU	2
	13	PAFZZ	61888	02100-00025	.RING, RETAINING	2
	14	PFOZZ	61888	22199-12401	.CAP,LUBRICATION F	2
	15	PFOZZ	61888	04901-00160	.FITTING,LUBRICATION	2
	16	PAFZZ	61888	63026-12151	.BUSHING,WASHER,TH	2
	17	PAFZZ	61888	03300-00650	.PACKING,PREFORMED	2
	18	PAFZZ	61888	02110-00085	.RING,RETAINING	2
	19	PFFZZ	61888	02270-06040	.PIN, SPRING.	4
	20	PFFZZ	61888	62516-12261	.PIN,STRAIGHT,HEAD	2
	21	PFFZZ	61888	02010-00012	.WASHER,LOCK	4
	22	PFFZZ	61888	01100-12025	.BOLT,MACHINE	4
	23	PAFZZ	61888	23917-42191	.WASHER,FLAT	V
	24	PAFZZ	61888	22679-43831	.WASHER,FLAT	V
	25	PFFZZ	61888	22679-43761	.ROLLER,LINEAR-ROT	2
	26	PFFZZ	61888	02010-00016	.WASHER, LOCK	4
	27	PFFZZ	61888	01103-16040	.BOLT,MACHINE	4
	28	PAFZZ	61888	02100-00025	.RING,RETAINING	2
	29	PFFZZ	61888	22578-22401	.BEARING,BALL,THRU	2
	30	PAFZZ	61888	01100-10020	.BOLT,MACHINE	8
	31	PAFZZ	61888	02010-00010	.WASHER,LOCK	8
	32	PAFZZ	61888	78260-69219	.SPACER,PLATE	2
	33	PAFZZ	61888	78260-69225	.SHIM	V
	34	PFFZZ	61888	23458-22111	.BEARING,BALL,ANNULA	4
	35	PAFZZ	61888	02100-00045	.RING,RETAINING	4
	36	PAOZZ	61888	01100-12025	.BOLT,MACHINE	6
	37	PAOZZ	61888	02010-00012	.WASHER,LOCK	6
	38	PFFZZ	61888	78260-69218	.PLATE, CLIP RETAIN	1
	39	PFFZZ	61888	62016-12222	.SHAFT,STRAIGHT	1
	40	PFFZZ	61888	01100-16065	.BOLT,MACHINE	2
	41	PFFZZ	61888	02010-00016	.WASHER,LOCK	2
	42	PFFZZ	61888	62016-12251	.GUIDE,LOWER,FORK	1
	43	PFFZZ	61888	78260-69003	.SUPPORT,FORK	1

END OF FIGURE

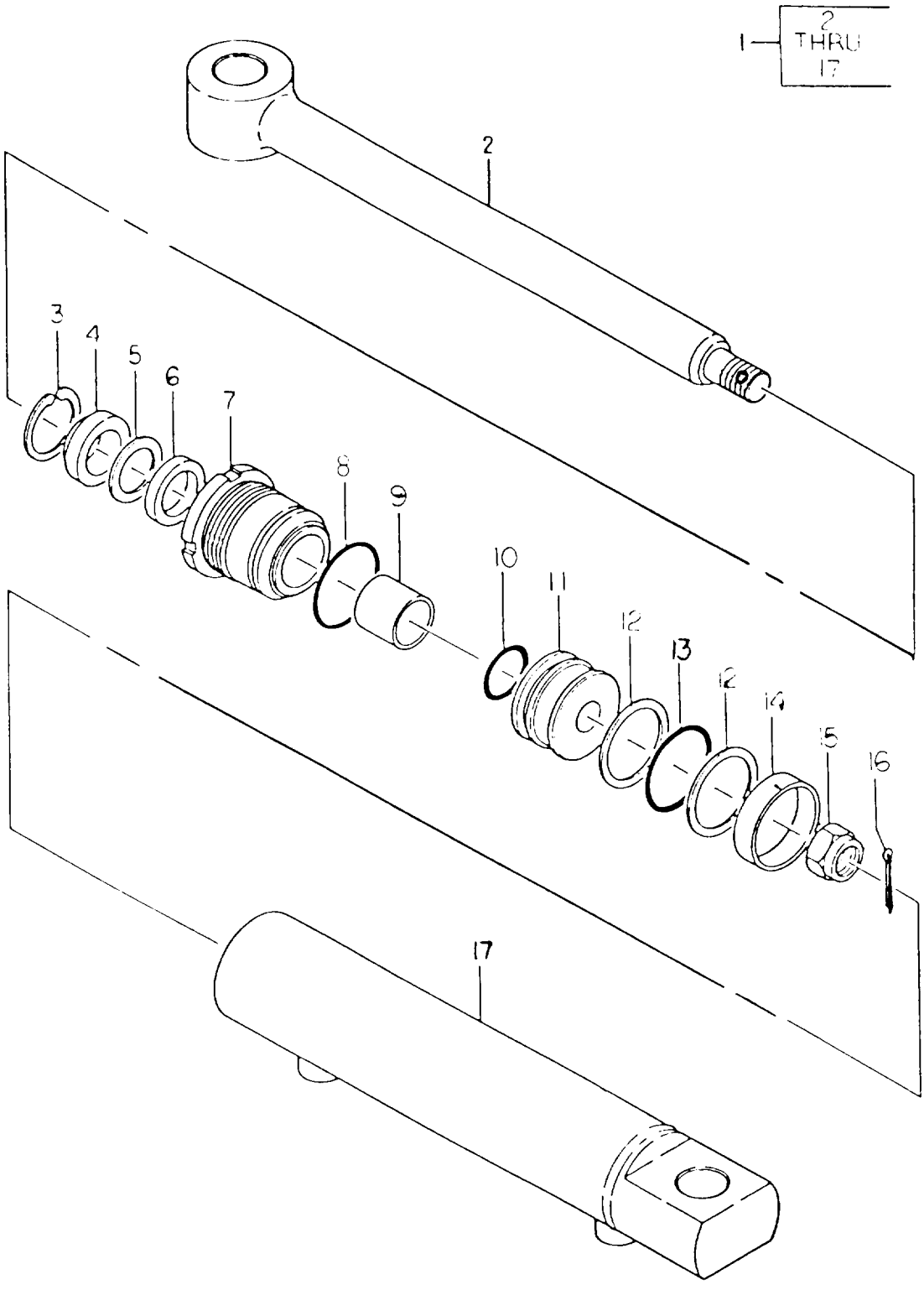

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FIGURE 83. SIDE SHIFTER CYLINDER ASSEMBLY

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 2405 MAST COLUMN	
				FIG. 83 SIDE SHIFTER CYLINDER ASSEMBLY	
1	PFFFF	61888	78260-69004	CYLINDER,ASSEMBLY	1
2	PFFZZ	61888	78260-69006	.ROD,PISTON,LINEAR	1
3	PFFZZ	61888	27978-52111	.RING,RETAINING	1
4	KFFZZ	61888	27918-92171	.PACKING,PREFORMED PART OF KIT P/N 27918-99801	1
5	KFFZZ	61888	27918-92161	.PACKING,PREFORMED PART OF KIT P/N 27918-99801	1
6	PFFZZ	61888	27918-92151	.GASKET PART OF KIT P/N 27918-99801	1
7	PFFZZ	61888	27918-92141	.VALVE GAS CYL	1
8	PFFZZ	61888	03350-00400	.PACKING, PREFORMED	1
9	PFFZZ	61888	22675-32021	.BUSHING,SLEEVE	1
10	PFFZZ	61888	03350-00250	.PACKING, PREFORMED	1
11	PFFZZ	61888	62016-12521	.SLEEVE,DIRECTIONAL	1
12	PAFZZ	61888	27738-52091	.PACKING,PREFORMED	2
13	PFFZZ	61888	03300-00390	.PACKING, PREFORMED	1
14	PFFZZ	61888	27738-52061	.RETAINER, PACKING	1
15	PFFZZ	61888	01412-10016	.NUT PLAIN, CASTEL	1
16	PFFZZ	61888	02200-04030	.PIN,COTTER,	1
17	PFFZZ	61888	78260-69005	.CYLINDER,ACTUATING	1

END OF FIGURE

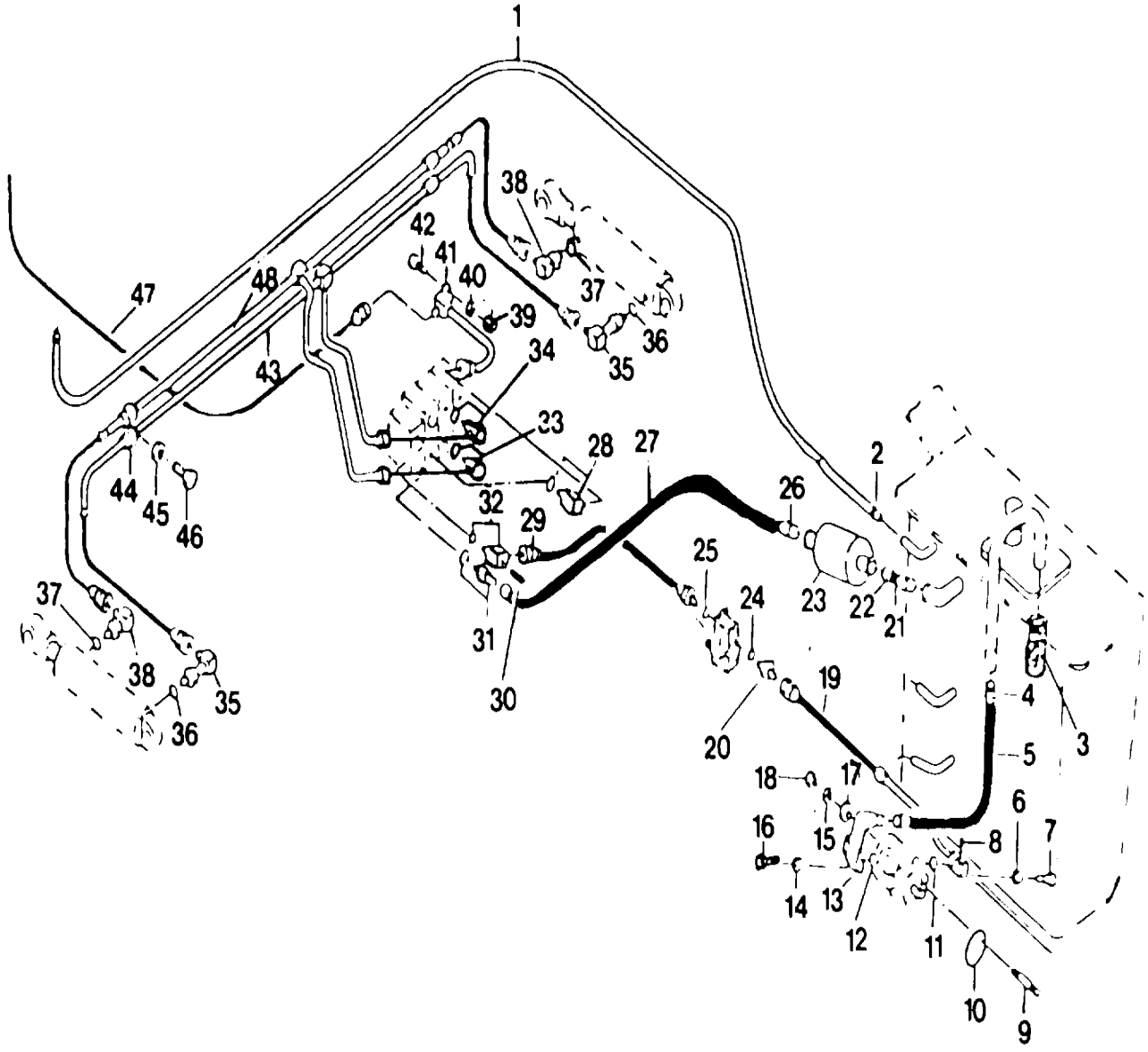

FIGURE 84. HYDRAULIC LINES, FITTINGS & FILTERS

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 2406 STRAINERS, FILTERS AND FITTINGS FIG.84. HYDRAULIC LINES, FITTINGS & FILTERS	
*	1	PAOZZ	61888	04720-13910	TUBING,NONMETALLIC	1
	2	PFOZZ	61888	04911-00018	CLAMP,HOSE	2
	3	PFOZZ	61888	23457-52221	FILTER ELEMENT FLU	1
	4	PFOZZ	61888	04911-00048	CLAMP,HOSE	2
	5	PFOZZ	61888	04700-12050	HOSE,NONMETALLIC	1
	6	PFOZZ	61888	80430-00006	WASHER,LOCK	4
	7	PFOZZ	61888	80110-00624	BOLT,SHOULDER	4
*	8	XDOZZ	61888	22193-03011	PLUG,PIPE	1
	9	PFOZZ	61888	23037-12001	STUD,PLAIN	2
*	10	PFOZZ	96906	MS28775-236	PACKING,PREFORMED	1
	11	PFOZZ	61888	03310-00300	PACKING,PREFORMED	1
	12	PFOZZ	61888	03310-00350	PACKING,PREFORMED	1
	13	PFOZZ	61888	23657-62001	ELBOW,HOSE TO BOSS	1
	14	PFOZZ	61888	80430-00006	WASHER,LOCK	4
	15	PFOZZ	61888	02010-00010	WASHER,LOCK	2
	16	PFOZZ	61888	80110-00616	BOLT, MACHINE	4
*	17	PFOZZ	15526	125ST-M10	WASHER,FLAT	2
	18	PFOZZ	61888	01402-00010	NUT,PLAIN,HEXAGON,	2
	19	PFOZZ	61888	78247-28010	HOSE ASSEMBLY, NONM	1
	20	PFOZZ	61888	04134-00404	NIPPLE,PIPE	1
*	21	PFOZZ	61888	04700-12105	HOSE,NONMETALLIC	1
	22	PFOZZ	61888	04911-00042	CLAMP,HOSE	1
*	23	PFOZZ	61888	25597-60301	FILTER,FLUID	1
	24	PFOZZ	61888	03320-00180	PACKING,PREFORMED	1
	25	PFOZZ	61888	03320-00180	PACKING,PREFORMED	1
	26	PFOZZ	61888	04911-00044	CLAMP HOSE	2
	27	PFOZZ	61888	24457-62011	HOSE,PREFORMED	1
	28	PFOZZ	61888	25177-61131	ELBOW,PIPE TO BOSS	1
	29	PFOZZ	61888	24457-62021	HOSE ASSEMBLY, NONM	1
	30	PFOZZ	61888	04000-00200	PLUG,PIPE	1
	31	PFOZZ	61888	24457-60211	ADAPTER, STRAIGHT, HO	1
	32	PFOZZ	61888	23657-60291	ELBOWTPIPE TO BOSS	1
	33	PFOZZ	61888	23457-60311	ELBOW,TUBE TO BOSS	1
	34	PFOZZ	61888	23457-60311	ELBOW,TUBE TO BOSS	1
	35	PFOZZ	61888	04150-00202	ELBOW,PIPE TO HOSE	2
	36	PFOZZ	61888	03320-00110	PACKING,PREFORMED	2
	37	PFOZZ	61888	03320-00110	PACKING,PREFORMED	2
	38	PFOZZ	61888	04150-00202	ELBOW,PIPE TO HOSE	2
	39	PFOZZ	61888	01400-00008	NUT, PLAIN,HEXAGON	1
*	40	PFOZZ	96906	MS35340-45	WASHER, LOCK	2
	41	PFOZZ	61888	23657-62121	TUBE ASSEMBLY,MET	1
	42	PFOZZ	61888	01106-08030	BOLT,MACHINE	1
	43	PFOZZ	61888	24457-60401	TUBE ASSEMBLY MET	1
	44	PFOZZ	61888	20317-60331	STRAP,RETAINING	2
*	45	PFOZZ	96906	MS35340-45	WASHER,LOCK.,	1
	46	PFOZZ	61888	01100-08025	BOLT,MACHINE	2

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
47	PFOZZ	61888	23460-92301	HOSE ASSEMBLY,NONET,.....	1
48	PFOZZ	61888	23657-60211	HOSE ASSEMBLY,NON.....	1

END OF FIGURE

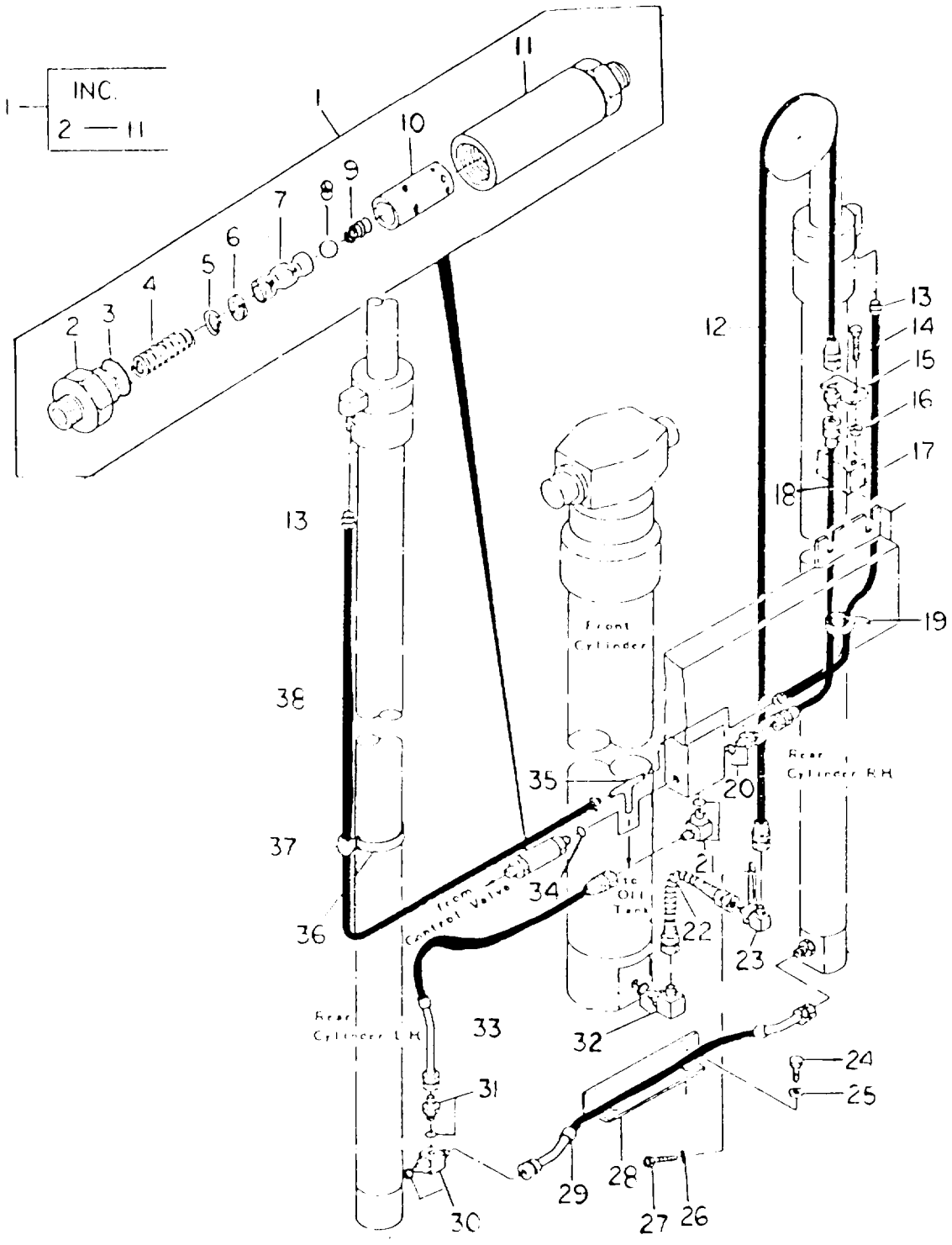

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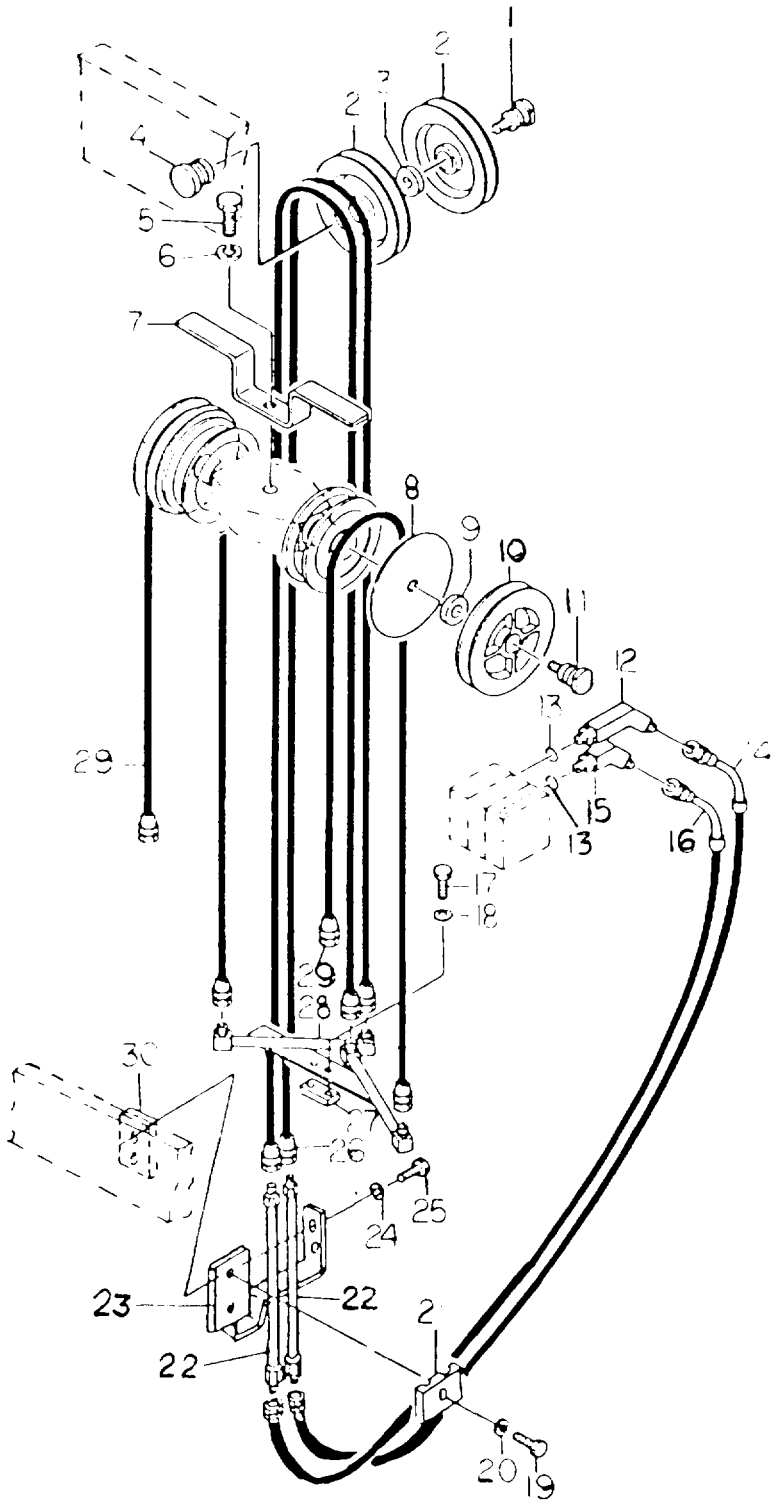
FIGURE 85. HYDRAULIC MAST PIPING, REAR CYLINDER

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 2406 STRAINERS, FILTERS AND FITTINGS	
					FIG.85 HYDAULIC MAST PIPING, REAR CYLINDER	
	1	PFOZZ	61888	23658-40403	VALVE,CHECK	1
	2	PFFZZ	61888	24459-42971	.REDUCER BODY,TUBE	1
	3	PFFZZ	61888	03320-00280	.PACKING,PREFORMED	1
*	4	XDFZZ	61888	23659-45311	.SPRING,HELICAL,COMP	1
	5	PFFZZ	61888	02110-00018	.RING,RETAINING	1
	6	PFFZZ	61888	23659-45301	.DISK,VALVE	1
	7	PFFZZ	61888	24459-42921	.PLUNGER,DETENT	1
	8	PFFZZ	61888	24459-42951	.BALL,VALVE,PORTED	1
	9	PFFZZ	61888	24459-42961	.SPRING,HELICAL,COMP	1
*	10	XDFZZ	61888	24459-42911	.SLEEVE,DIRECTIONAL	1
	11	XAFZZ	61888	24459-42901	.CASE	1
	12	PFOZZ	61888	78260-69236	HOSE ASSEMBLY,NONME	1
	13	PFOZZ	61888	04911-00018	CLAMP,HOSE	4
	14	PFOZZ	61888	01120-10050	BOLT MACHINE	2
	15	PFOZZ	61888	23650-92071	NIPPLE,ADJUSTER	1
	16	PFOZZ	61888	01400-00010	NUT,PLAIN,HEXAGON	2
	17	PFOZZ	61888	04720-13079	HOSE ASSEMBLY,NONME	1
	18	PFOZZ	61888	24230-92321	HOSE ASSEMBLY,NONME	1
	19	PFOZZ	61888	27132-40181	STRAP,TIEDOWN,ELECT	1
	20	PFOZZ	61888	04134-00404	NIPPLE,PIPE	1
	21	PFOZZ	61888	04150-00404	ELBOW,PIPE	1
	22	PFOZZ	61888	23650-92061	HOSE ASSEMBLY,NONME	1
	23	XDOZZ	61888	78260-69234	COUPLING ASSEMBLY	1
	24	PFOZZ	61888	01100-10025	BOLT,MACHINE	2
	25	PFOZZ	61888	02010-00010	WASHER,LOCK	2
	26	PFOZZ	61888	02010-00006	WASHER,LOCK	2
	27	PFOZZ	61888	01100-06020	BOLT,MACHINE	2
	28	PFOZZ	61888	24239-44221	BRACKET,ANGLE	1
	29	PFOZZ	61888	24450-92101	HOSE AND TUBE ASSEM	1
	30	PFOZZ	61888	23659-44601	TEE,PIPE TO TUBE	1
	31	PFOZZ	61888	04134-00404	NIPPLE,PIPE	1
	32	PFOZZ	61888	04150-00404	ELBOW,PIPE	1
	33	PFOZZ	61888	24450-92121	HOSE AND TUBE ASSEM	1
	34	PFOZZ	61888	03320-00280	PACKING PREFORMED	1
*	35	PFOZZ	61888	23659-44681	CONNECTOR,TUBING BR	1
	36	PFOZZ	61888	27132-40171	STRAP,TIEDOWN,ELECT	1
	37	PFOZZ	61888	24239-44311	BAND,RETAINING	1
*	38	PFOZZ	61888	04720-13910	TUBING,NONMETALLIC	1
					END OF FIGURE	

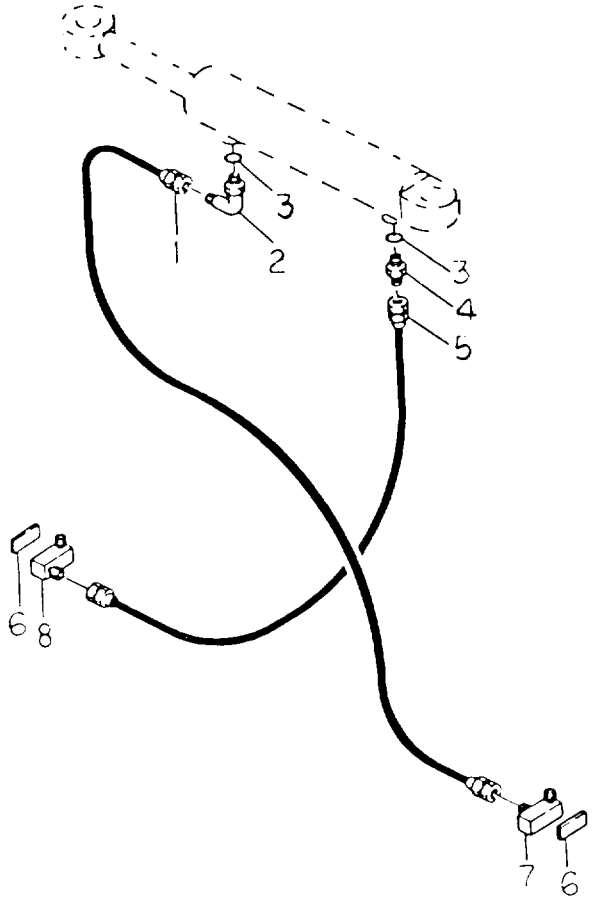


TA265216

FIGURE 86. HYDRAULIC MAST PIPING, SIDE SHIFTERS

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 2406 STRAINERS, FILTERS AND FITTINGS	
					FIG.86 HYDRAULIC MAST PIPING, SIDE SHIFT	
	1	PFOZZ	61888	62130-14031	BOLT,SPECIAL	1
*	2	XDOZZ	61888	63130-15301	PULLEY,GROOVE	2
*	3	PFOZZ	61888	62050-12021	WASHER,FLAT	1
*	4	XDOZZ	61888	62130-14041	PULLEY,CONE	1
	5	PFOZZ	61888	01100-16070	BOLT,MACHINE	1
	6	PFOZZ	61888	02010-00016	WASHER,LOCK	1
*	7	XDOZZ	61888	62130-14141	GUARD, MECHANICAL	1
	8	PFOZZ	61888	62130-12101	WASHER,FLAT	2
*	9	XDOZZ	61888	62050-12021	WASHER,FLAT	2
*	10	XDOZZ	61888	63130-15301	PULLEY,GROOVE	2
*	11	XDOZZ	61888	62130-14031	BOLT,SPECIAL	2
	12	PFOZZ	61888	63110-12031	ELBOW,TUBE TO BOSS	1
	13	PFOZZ	61888	89140-00006	PACKING,PREFORMED	2
	14	PFOZZ	61888	62130-12011	HOSE ASSEMBLY,NONME	1
	15	PFOZZ	61888	23307-62281	ELBOW,TUBE TO BOSS	1
	16	PFOZZ	61888	62130-12001	HOSE ASSEMBLY,NONM	1
	17	PFOZZ	61888	01100-10020	BOLT,MACHINE	2
	18	PFOZZ	61888	02010-00010	WASHER,LOCK	2
	19	PFOZZ	61888	01100-10040	BOLT, MACHINE	2
	20	PFOZZ	61888	02010-00010	WASHER,LOCK	2
	21	PFOZZ	61888	63810-12081	STRAP,RETAINING	2
	22	PFOZZ	61888	63130-12101	TUBE ASSEMBLY,MET	2
	23	PFOZZ	61888	62130-14211	BRACKET,DOUBLE ANG	1
*	24	PFOZZ	96906	MS35340-45	WASHER,LOCK	2
*	25	PFOZZ	61888	01100-08015	BOLT,MACHINE	2
	26	PFOZZ	61888	78260-69231	PARTS KIT,FORK LIF	2
	27	PFOZZ	61888	62023-42811	BLOCK,CONNECTOR	1
	28	PFOZZ	61888	62130-14061	TUBE AND PLATE ASSE	1
*	29	PFOZZ	61888	04601-33160	HOSE ASSEMBLY,NONME	2
	30	PFOZZ	61888	62130-14001	PLATE, CLIP RETAIN	1

END OF FIGURE

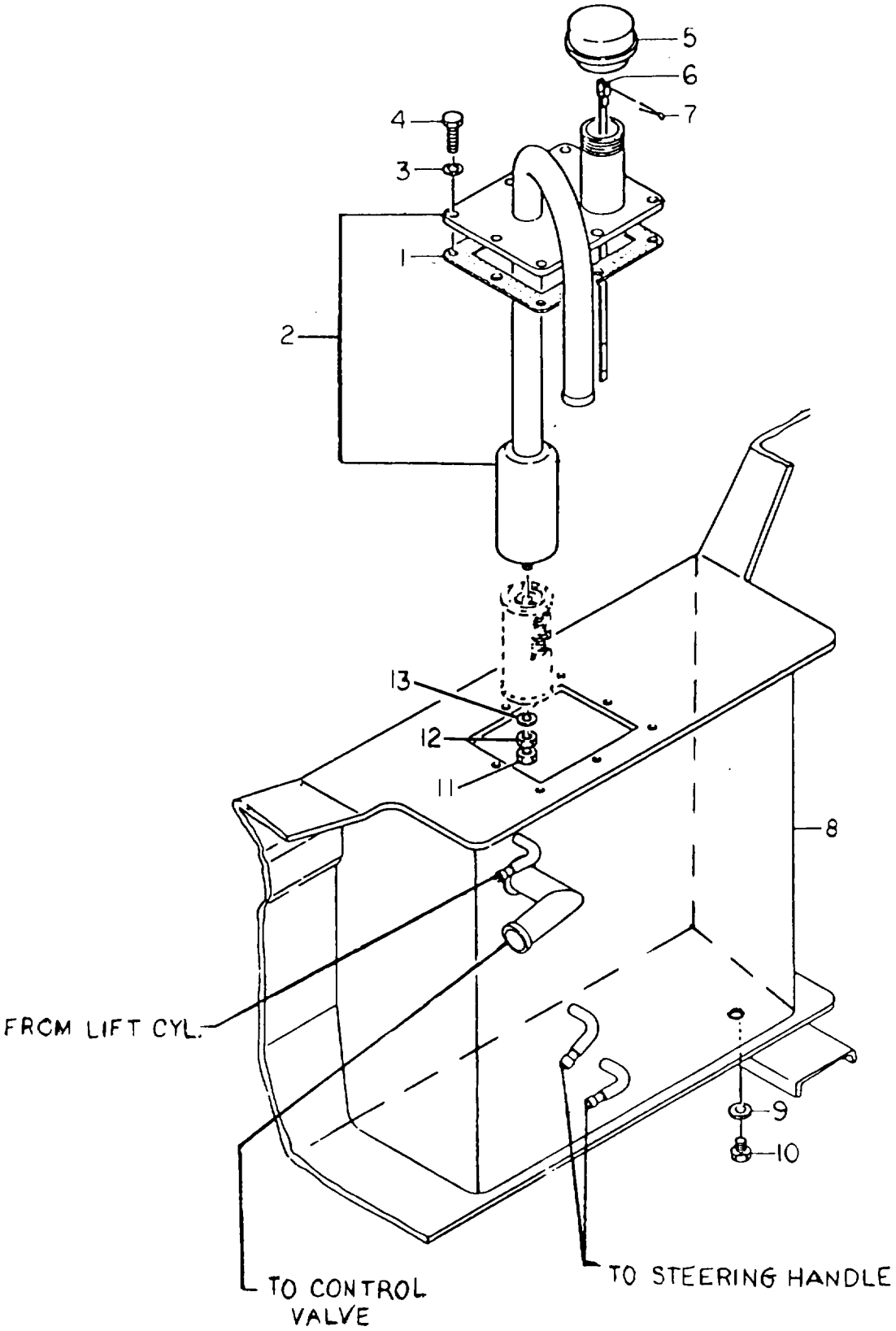


TA265217

FIGURE 87. HYDRAULIC MAST PIPING, SIDE SHIFT CYLINDER

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 2406 STRAINERS, FILTERS AND FITTINGS	
					FIG. 87. HYDRAULIC MAST PIPING, SIDE SHIFT CYLINDER	
*	1	PFOZZ	61888	04471-03070	HOSE ASSEMBLY,NONME	1
	2	PFOZZ	61888	63110-12351	ELBOW, PIPE	1
	3	PFOZZ	61888	03320-00110	PACKING, PREFORMED	2
	4	PFOZZ	61888	53110-12421	REDUCER, PIPE	1
*	5	PFOZZ	61888	04471-03060	HOSE ASSEMBLY,NONME	1
	6	PFOZZ	61888	62336-13011	SPACER, PLATE,	2
	7	PFOZZ	61888	63110-14751	CONNECTOR,MULTIPLE,	1
	8	PFOZZ	61888	63110-14731	CONNECTOR,MULTIPLE,	1

END OF FIGURE



TA265218

FIGURE 88. HYDRAULIC OIL TANK

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 2408 LIQUID TANK	
					FIG.88 HYDRAULIC OIL TANK	
	1	PFFZZ	61888	52252-72071	GASKET.	1
	2	PFFZZ	61888	23657-53002	TUBE ASSEMBLY,MET	1
*	3	PFFZZ	96906	MS35340-45	WASHER,LOCK	8
*	4	PFFZZ	61888	01100-08020	BOLT,MACHINE	8
	5	PFFZZ	61888	23657-53051	CAP,FILLER OPENING	1
*	6	XDFZZ	61888	23657-53101	GAGE ROD-CAP,LIQUI	1
*	7	PAFZZ	96906	MS24665-300	PIN,COTTER	1
	8	XAFHH	61888	78260-69333	FRAME	1
*	9	XDFZZ	61888	22197-52091	PACKING,PREFORMED	1
*	10	XDFZZ	61888	22197-52081	PLUG,VENT	1
	11	PFFZZ	61888	01402-00008	NUT,PLAIN,HEXAGON	1
	12	PFFZZ	61888	01400-00008	NUT,PLAIN,HEXAGON	1
	13	PFFZZ	61888	22252-21011	SEAL,RUBBER STRIP	1

END OF FIGURE

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)			(6) QTY
				GROUP 94 REPAIR KITS			
				GROUP 9401 REPAIR KITS			
				FIG KITS			
	PFHZZ	61888	N-10101-L1125	GASKET			V
				GASKET	(	1)	9-23
				GASKET	(	1)	3-11
				GASKET	(	1)	8-4
				GASKET	(	1)	7-9
				GASKET	(	1)	9-8
				GASKET	(	2)	14-11
				GASKET	(	1)	24-11
				GASKET	(	1)	31-14
				GASKET	(	1)	23-5
				GASKET, HSG.TO BLOCK	(	1)	7-15
				GASKET,MANIFOLD	(	1)	11-1
				GASKET,OIL PAN	(	1)	9-22
				PACKING PREFORMED	(	1)	31-12
				PACKING,FRONT COV.	(	1)	7-24
				PACKING,OIL FILLER	(	1)	9-32
				SEAL, OIL, REAR CAP	(	2)	2-19
				SEAL, OIL CRANKSHAFT	(	2)	2-20
				SEAL, OIL FRONT COV.	(	1)	7-28
				SEAL, VALVE, OIL	(	8)	8-9
	PFFZZ	61888	N-16455-A3501	PARTS KIT,CARBURETO PART OF KIT P/N 20801-09911.....			V
				GASKET, BODY-AIRHORN	(	1)	12-12
				GASKET, FLT.CHMBR.	(	1)	12-26
*				GASKET, FLANGE COMP.	(	1)	12-36
				GASKET, FUEL UNION	(	1)	12-72
				GASKET JET ASSY.PWR	(	1)	12-80
				GASKET,JET 2ND MAIN	(	1)	12-28
				GASKET,JET 1ST.MAIN	(	1)	12-33
				GASKET, NOZZLE IDLE	(	1)	12-41
				GASKET, PLUG MN.JET	(	2)	12-30
				GASKET, PLUG SLOW	(	1)	12-35
				GASKET, PLUG NOZ.IDL	(	1)	12-43
				GASKET, UNION BOLT	(	1)	12-76
				GASKET, VENTURI	(	1)	12-20
				GASKET, VACUUM CONN.	(	2)	12-45
*	PFFZZ	61888	N-16465-B0100	SCREW, ASSEMBLY PANE PART OF KIT P/N 20801-09911.....			V
*				BALL, STEEL 1/8	(	1)	12-22
*				GASKET, BODY-AIRHORN	(	1)	12-12
*				LOCK WSHR.THROT.SHT	(	1)	12-55
*				LOCK WSHR, FLG SCREW	(	1)	12-49
*				LOCK WSHRLVR.ASSY	(	1)	12-52
*				PARTS KIT CARBURETO	(V	)	KITS-
*				SCREW, FLOAT CHAMBER	(	3)	12-25
*				SCREW, FLG.COMP.- MB	(	2)	12-73
*							

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)			(6) QTY
*				SCREW, LEVER ASSY	(1)	12-53	
*				SCREW VENTURI	(2)	12-15	
*				SET SCREW AIR HORN	(4)	12-83	
*				WASHER, LVR.CONN.TOP	(1)	12-4	
*	PFFZZ	61888	N-16475-B0100	PARTS KIT, CARBURETO PART OF KIT P/N N-16465-B0100			V
*				CLIP, PUMP ARM	(1)	12-7	
*				COT.LEVER.CONN.TOP	(1)	12-5	
*				COT.ROD CONN.BOT	(1)	12-58	
*				COT.ROD CONN.BOT	(1)	12-63	
*				COT.ROD CONN.TOP	(1)	12-9	
*				LOCK WSHR.HORN SCR	(1)	12-81	
*				WASHER,AIR HORN SCR	(1)	12-79	
*				WASHER,LVR.CONN.BOT	(1)	12-64	
*				WSHR.ROD CONN.BOT.	(1)	12-51	
*				WSHR.ROD CONN.TOP	(1)	12-10	
	PFHZZ	61888	12163-89801	PARTS KIT,DRIV			V
				GASKET	(1)	46-2	
				GASKET	(1)	48-46	
				O-RING	(1)	46-3	
				O-RING	(1)	46-21	
				O-RING	(1)	48-17	
				O-RING	(1)	48-36	
				O-RING	(1)	52-10	
				O-RING	(1)	55-44	
				O-RING	(1)	55-5	
*				PACKING, PREFORMED	(1)	48-9	
				PACKING,COPPER	(1)	48-3	
				PACKING, PREFORMED	(1)	48-38	
				PACKING, COPPER	(4)	52-3	
				PACKING, PREFORMED	(1)	52-12	
				PLATE, LOCK	(4)	48-31	
				PLATE, LOCK	(6)	55-30	
				SEAL OIL	(1)	55-42	
				SHIM	(V)	55-46	
				SHIM	(V)	55-47	
				SHIM	(V)	55-48	
*				SHIM	(2)	55-8	
				SHIM	(4)	55-7	
				SHIM	(2)	55-6	
	PFHZZ	61888	12163-89821	REPAIR KIT,DUMPING			V
				BEARING, NEEDLE	(1)	53-10	
				GASKET	(1)	53-14	
				O-RING	(1)	53-7	
				SEAL OIL	(1)	53-6	
*	PFHZZ	61888	12163-89831	PARTS KIT,CLUTCH			V
				RING, SEAL	(2)	51-6	
				RING, SEAL	(2)	51-5	
*				RING SEAL	(1)	51-19	
				RING,SEAL	(3)	51-22	
				RING, SNAP	(2)	51-13	
				RING, SNAP	(1)	51-18	

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)			(6) QTY
	PFFZZ	61888	12163-89851	PARTS KIT, LINEAR			V
				GASKET	(1)	50-13	
				GASKET	(1)	50-8	
				RING,SNAP	(1)	50-2	
				SEAL,OIL	(1)	50-10	
*	PFFZZ	61888	13657-19801	PARTS KIT LINEAR DI			V
				RING,LH.BACKING	(2)	75-8	
				RING,RH.BACKING	(2)	75-6	
				RING,SNAP	(1)	75-16	
				SEAL,BODY	(2)	75-5	
				SEAL,BUSHING	(2)	75-7	
				SEAL,OIL	(1)	75-15	
	PFHZZ	61888	14354-12291	PARTS KIT, POWER ST			V
*				BEARING,NEEDLE	(2)	66-43	
*				NEEDLE,BEARING	(1)	66-33	
*				O-RING	(1)	66-31	
*				O-RING	(2)	66-41	
*				O-RING	(1)	66-52	
				SEAL, OIL	(1)	66-14	
*				SEAL OIL	(1)	66-32	
	PFFZZ	61888	20801-09911	PARTS KIT,CARBURET			V
				CLIP,PUMP STRAINER	(1)	12-68	
				GASKET,FLOAT V.SEAT	(3)	12-71	
				JET,SLOW	(1)	12-18	
				JET,SLOW A B	(1)	12-21	
*				JET,1ST.MAIN	(1)	12-32	
				JET,2ND.MAIN	(1)	12-29	
*				PARTS KIT,CARBURET	(V)		
				PLUNGER,PUMP COMP.	(1)	12-69	
*				SCREW,ASSEMBLY PANE	(V)	KITS-	
				SEAT COMP.FLOAT V.	(1)	12-70	
				STRAINER,ASSY.	(1)	12-74	
				STRAINER ,PUMP	(1)	12-67	
*	PFHZZ	61888	22197-39802	PARTS KIT, LINEAR DI			V
				O-RING	(1)	76-4	
				O-RING	(1)	76-9	
				O-RING	(6)	76-22	
				O-RING	(4)	76-24	
				WIPER	(6)	76-23	
	PFOZZ	61888	23654-39821	BOLT AND SPACER KIT IT.			V
*				BOLT	(16)	63-9	
*				NUT,HUB	(16)	63-10	
	PFOZZ	61888	23654-49811	BOLT AND SPACER KIT			V
*				BOLT,MACHINE	(16)	63-17	
*				NUT,PLAIN,HEXAGON	(16)	63-15	
*				WASHER ,LOCK	(16)	63-16	
*	PFFZZ	61838	23654-52201	PARTS KIT,SEAL RE			V
				O-RING	(1)	69-12	
				O-RING	(1)	69-14	
				SEAL SLIPPER	(1)	69-13	
				U-RING	(1)	69-16	
				WIPER,DUST	(1)	69-17	

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)			(6) QTY
	PFFZZ	61888	23658-50341	PACKING ASSORTMENT PART OF KIT P/N 23658-59801			V
				PACKING	(	1)	78-20
				RING, BACK-UP	(	1)	78-19
	PFFZZ	61888	23658-59801	PACKING ASSORTMENT PART OF KIT P/N 24458-59811			V
*				PACKING ASSORTMENT	(V	)	KITS-
*				PACKING	(	1)	78-20
				RING,BACK-UP	(	1)	78-21
*				RING,BACK-UP	(	1)	78-19
	PAOZZ	61888	24354-19801	PARTS KIT, HORN BUT			V
				BUTTON HORN	(	1)	42-6
				CUP, CONTACT	(	1)	42-5
				LOCK, SPRING	(	1)	42-4
				SPRING,HORN BUTTON	(	1)	42-3
*	PFFZZ	61888	24450-89801	PACKING ASSORTMENT			V
				O-RING	(	1)	81-14
				PACKING	(	1)	81-8
				RING,BACK-UP	(	1)	81-7
				RING,BACK-UP	(	1)	81-15
				SEAL,DUST	(	1)	81-6
	PFFZZ	61888	24454-39802	PARTS KIT,STEERING			V
*				BEARING,THRUST	(	2)	56-32
				FITTING,LUBRICATION	(	2)	56-14
				FITTING,LUBRICATION	(	2)	56-12
				NEEDLE BEARING	(	4)	56-3
				NUT,PLAIN,HEXAGON	(	2)	56-27
				O-RING	(	2)	56-18
				OIL SEAL	(	4)	56-1
				PIN,LOCK	(	2)	56-4
				SHIM	(V	)	56-30
				WASHER,FLAT	(	2)	56-29
				WASHER,LOCK	(	2)	56-28
	PFFZZ	61888	24454-39811	PARTS KIT STEERING			V
*				BOLT,MACHINE	(	2)	56-24
				FITTING,LUBRICATION	(	1)	56-5
				NEEDLE BEARING	(	2)	56-17
				OIL SEAL	(	2)	56-16
*				SET PLATE	(	1)	56-22
				SHIM	(V	)	56-6
				SPACER	(	1)	56-2
				WASHER,LOCK	(	2)	56-23
	PFFZZ	61888	24458-50311	PACKING ASSORTMENT PART OF KIT P/N 24458-59811			V
				RING BACK-UP	(	1)	78-28
				RING SLIPPER	(	1)	78-27
	PFFZZ	61888	24458-59811	PARTS KIT,LINEAR A,			V
*				O-RING	(	1)	78-22
*				PACKING ASSORTMENT	(V	)	KITS-
*				PACKING ASSORTMENT	(V	)	KITS-
*				RING,BACK-UP	(	1)	78-28
*				RING,BACK-UP	(	1)	78-21

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)			(6) QTY
*				RING,SLIPPER	(1)	78-27	
*				RING,SNAP	(1)	78-17	
*				SEAL,DUST	(1)	78-18	
*				WEARING	(2)	78-26	
	PFFZZ	61888	24459-49801	PACKING ASSORTMENT.....			V
				O-RING	(2)	80-24	
				O-RING	(2)	80-23	
				O-RING	(2)	80-26	
				PACKING ASSEMBLY	(2)	80-29	
				PACKING	(2)	80-31	
				PIN,COTTER	(2)	80-33	
				RING,BACK-UP	(2)	80-30	
				SEAL,DUST	(2)	80-17	
				WEARING	(2)	80-28	
*	PFFZZ	61888	27918-99801	PARTS KIT, LINEAR DI.....			V
*				GASKET	(1)	83-6	
*				PACKING,PREFORMED	(1)	83-5	
*				PACKING,PREFORMED	(1)	83-4	

END OF FIGURE

CROSS- REFERENCE-INDEXES
NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM
5310-00-011-6125	66	60
6240-00-013-1282	33	4
5315-00-013-7214	79	35
4730-00-050-4208	78	12
	82	1
5975-00-074-2072	43	1
3110-00-100-6151	46	1
3110-00-108-9225	5	7
4730-00-172-0058	61	1
4730-00-173-1884	68	9
5306-00-206-6003	46	7
5315-00-234-1863	88	7
5315-00-236-8357	57	4
	73	27
2610-00-246-2829	65	1
2640-00-472-8645	64	3
	65	3
5920-00-539-6920	38	2
3110-00-554-3197	48	20
5330-00-579-6861	84	10
2910-00-587-5526	16	7
5365-00-663-2215	79	21
5315-00-664-6213	48	14
5975-00-727-5153	19	2
	33	13
6220-00-774-4704	39	1
6240-00-809-4977	39	2
2990-00-838-2590	19	1
5315-00-839-5822	61	14
5315-00-842-3044	59	3
5315-00-852-4113	57	20
4730-00-857-0960	80	3
	81	11
3030-00-864-7398	25	3
5920-00-879-6285	38	3
6240-00-889-1799	39	4
5310-00-959-4679	7	16
	9	11
	13	2
	15	15
	16	2
	19	17
	21	11
	27	7
	30	2
	30	5
	43	12
	45	12
	56	23
	57	3
5310-00-959-4679	61	34
	68	13
	70	7
	73	19
	74	2
	77	21
	84	40
	84	45
	86	24
	88	3
4730-01-019-9815	84	20
	85	20
	85	31
5310-01-074-2101	50	15
5975-01-084-0977	68	11
	85	19
5310-01-102-0328	21	2
	61	16
7690-01-114-3702	15	16
5310-01-116-1212	77	14
5310-01-117-2409	19	9
	44	4
5310-01-122-3214	20	8
	56	29
	61	13
	66	3
	73	4
	73	15
	74	10
	80	14
	84	17
3110-01-136-5383	63	5
5310-01-138-3289	19	11
	20	5
	28	3
	43	5
	70	21
	77	26
	85	26
2940-01-150-9445	9	25
5315-01-154-3202	19	19
2920-01-159-0869	32	16
2940-01-159-0956	15	9
5306-01-167-2284	21	10
5306-01-167-2285	23	9
5330-01-167-2303	23	7
5330-01-167-2304	24	4
5306-01-167-2310	7	20
5306-01-167-2311	7	11
	7	26

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5306-01-167-2311	25	5	4820-01-168-3462	48	12
5310-01-167-2318	47	3	5340-01-168-3510	66	46
4730-01-167-2824	46	18	2930-01-168-3622	22	1
	56	12	2530-01-168-3647	66	29
	56	14	2530-01-168-3648	66	36
	56	15	2520-01-168-3655	KITS	
	56	26	2990-01-168-3674	20	1
	78	33	2530-01-168-3698	58	28
5310-01-167-3992	24	7	2990-01-168-3725	20	12
4720-01-167-4325	23	11	2530-01-168-3745	66	8
4720-01-167-4326	23	10	5330-01-168-3873	49	6
4730-01-167-4402	23	14	5310-01-168-3934	54	13
	84	26	5310-01-168-3935	47	5
5365-01-167-6268	53	4	5310-01-168-3936	57	19
3040-01-167-7089	48	18	5310-01-168-3942	45	9
2520-01-167-7128	46	16		46	5
2520-01-167-7184	51	8	5330-01-168-3945	46	8
3040-01-167-7199	45	18		48	9
	57	17	5365-01-168-4111	55	22
3040-01-167-7200	45	13	5365-01-168-4112	55	21
3040-01-167-7202	48	42	5365-01-168-4113	55	20
2520-01-167-7209	54	17	5365-01-168-5423	51	10
4720-01-167-7232	23	13	5305-01-168-5424	51	20
4720-01-167-7233	23	15	5310-01-168-5426	66	45
4730-01-167-7960	20	13	5310-01-168-5427	66	56
2520-01-167-7977	46	23	5360-01-168-5491	66	37
4320-01-167-9215	24	8	5360-01-168-5492	66	39
4320-01-167-9216	24	10	5360-01-168-5493	49	8
3040-01-167-9258	47	1	5360-01-168-5494	49	10
2530-01-167-9270	67	1	5360-01-168-5495	49	11
3020-01-167-9278	25	2	5360-01-168-5496	49	3
4710-01-167-9288	23	1Z	5360-01-168-5497	51	11
3120-01-167-9436	45	7	5360-01-168-5498	58	11
2520-01-168-1646	51	2	5330-01-168-5508	66	54
5310-01-168-1775	1	4	5305-01-168-5543	66	51
	20	10	5306-01-168-5544	24	5
	79	40	3120-01-168-5566	51	16
5310-01-168-1776	21	3	5310-01-168-5571	61	3
2930-01-168-2003	24	1	5310-01-168-5572	66	57
2520-01-168-2043	KITS		5310-01-168-5577	7	13
2520-01-168-2135	51	7		9	27
2530-01-168-2152	67	23		24	6
2540-01-168-2154	61	22	5310-01-168-5579	58	23
5310-01-168-3075	20	11	5340-01-168-5586	23	2
	74	6	5340-01-168-5600	45	15
	79	37	5365-01-168-5604	66	42
5365-01-168-3196	20	9	5365-01-168-5605	66	44
	79	38	5365-01-168-5606	66	59
5365-01-168-3204	24	3	5360-01-168-5616	58	17
5365-01-168-3205	25	4	5360-01-168-5617	58	17

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5330-01-168-5640	54	11	4820-01-169-1922	21	8
5330-01-168-5641	54	7	2520-01-169-1934	47	4
5330-01-168-5649	54	6	4720-01-169-1949	52	9
5340-01-168-5679	23	8	2930-01-169-1957	21	7
5360-01-168-5726	57	14	3040-01-169-1974	66	38
5365-01-168-5736	55	38	5306-01-169-2062	11	11
5365-01-168-5739	54	12	3110-01-169-2117	54	10
5365-01-168-5741	55	39	4730-01-169-2661	60	3
4730-01-168-6414	54	4	2520-01-169-2712	54	2
4720-01-168-7613	59	2	2520-01-169-2842	51	1
2590-01-168-7620	57	9	5306-01-169-2899	46	13
4730-01-168-8688	23	3	5310-01-169-2907	67	9
5306-01-168-8972	49	13		67	16
5315-01-168-8973	53	5		83	15
5325-01-168-8974	66	28	5310-01-169-2914	54	14
3110-01-168-9074	51	23	5340-01-169-3026	45	4
3110-01-168-9078	51	17	5315-01-169-3199	45	1
3110-01-168-9079	55	41	5315-01-169-3200	48	43
3110-01-168-9080	66	13	4720-01-169-3706	21	6
5365-01-168-9093	49	2	5306-01-169-4424	20	3
5360-01-168-9106	58	14	5310-01-169-4430	55	49
4010-01-168-9140	58	3	3110-01-169-4440	54	8
3120-01-168-9144	60	4	2530-01-169-4941	60	2
3120-01-168-9152	51	14	2530-01-169-4942	59	1
5330-01-168-9167	58	22	2540-01-169-4943	61	19
5340-01-168-9207	49	14	4330-01-169-4968	52	6
5330-01-168-9246	54	18	4710-01-169-4992	59	12
2530-01-168-9350	58	12	4710-01-169-5404	59	8
2530-01-168-9407	58	15	4710-01-169-5405	59	15
4320-01-168-9535	KITS		5340-01-169-5420	58	4
4820-01-168-9566	49	4	5340-01-169-5421	67	18
4820-01-168-9583	49	1	5340-01-169-5465	61	33
2530-01-168-9595	58	15	5310-01-169-5549	66	58
5306-01-168-9895	50	16	5310-01-169-5550	67	24
5365-01-168-9990	66	50	5310-01-169-5551	67	20
5306-01-169-0066	20	7	5365-01-169-5641	66	27
5305-01-169-0072	47	7	5315-01-169-5672	57	13
	48	26		59	7
5307-01-169-0132	54	15	5365-01-169-5705	52	11
5330-01-169-0666	21	9	5365-01-169-5706	66	15
5306-01-169-0675	21	4	3110-01-169-5711	55	36
5306-01-169-0676	45	5	5330-01-169-6408	55	43
5306-01-169-0677	47	6	5365-01-169-6531	48	6
5306-01-169-0678	46	10		52	14
5306-01-169-0679	46	9		‘81	10
5306-01-169-0683	46	6	5365-01-169-6532	50	12
5306-01-169-0684	46	12	5360-01-169-6754	50	5
5310-01-169-0705	55	50	5330-01-169-6755	53	3
4730-01-169-1915	52	13	5340-01-169-6785	57	8
2520-01-169-1916	55	17	5340-01-169-6828	54	3

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5306-01-169-7032	16	1	5310-01-169-9632	82	21
	19	20		82	37
	57	10	3040-01-169-9696	51	21
	70	14	3020-01-169-9771	55	33
	88	4	5340-01-170-0761	57	15
5315-01-169-7033	58	26	2520-01-170-0826	48	28
5310-01-169-7105	45	14	2530-01-170-0839	58	18
5360-01-169-7127	58	21	2530-01-170-0840	58	24
3120-01-169-7168	46	17	5330-01-170-1363	48	53
2530-01-169-7324	KITS		2520-01-170-2523	53	1
2520-01-169-7336	46	22	3020-01-170-2556	55	25
3040-01-169-7349	66	49	2530-01-170-2579	58	18
4710-01-169-7354	48	41	2530-01-170-2580	58	24
2920-01-169-7378	48	45	5306-01-170-3175	48	40
3040-01-169-7383	55	10	5306-01-170-3176	48	27
3020-01-169-7393	48	22	5306-01-170-3177	48	49
3040-01-169-7416	67	25	5306-01-170-3178	55	2
4720-01-169-7633	52	8		79	42
4730-01-169-7643	48	7		85	24
3040-01-169-7656	53	9	5340-01-170-3216	57	6
3040-01-169-7706	48	21	5306-01-170-3723	53	2
3040-01-169-7709	66	34	5360-01-170-3738	58	13
3040-01-169-7710	57	1	5305-01-170-3771	47	2
3040-01-169-7743	67	11	3120-01-170-3845	61	21
5310-01-169-8257	19	12		61	25
	20	6		83	9
	28	4	2530-01-170-3966	66	16
5310-01-169-8258	19	16	4710-01-170-4012	52	16
	45	11	5340-01-170-4546	58	20
	70	8	5306-01-170-4551	48	10
	74	3		59	9
	77	20	5306-01-170-4552	48	32
	84	39	5306-01-170-4553	48	51
	88	12	5306-01-170-4555	58	7
5310-01-169-8267	59	13	5306-01-170-4556	61	31
	73	37	5330-01-170-4610	52	2
3120-01-169-8298	66	30	5340-01-170-4624	57	11
5365-01-169-8360	48	23	4730-01-170-4663	52	5
5365-01-169-8366	21	1	4730-01-170-4676	52	15
5365-01-169-8368	55	37	3020-01-170-4747	48	25
2520-01-169-8694	48	5	3020-01-170-4749	51	24
5315-01-169-9454	46	20	3020-01-170-4750	51	15
4820-01-169-9600	50	9	2520-01-170-5372	KITS	
5310-01-169-9620	58	5	3020-01-170-5404	55	23
5310-01-169-9632	63	16	2520-01-170-5421	50	1
	66	6	5305-01-170-6190	55	32
	71	3	5315-01-170-6442	61	17
	71	9	5360-01-170-6585	48	4
	79	6	5360-01-170-6598	61	32
	80	19	5340-31-170-6613	48	2

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5340-01-170-6616	48	48
4730-01-170-7071	3	6
	3	10
	24	9
2530-01-170-7114	66	23
5310-01-170-8507	66	55
5340-01-170-8562	55	31
3110-01-170-8565	55	9
5325-01-170-8581	66	1
5340-01-170-8608	59	10
2930-01-170-9281	21	12
2530-01-170-9289	67	5
4730-01-170-9791	52	4
2530-01-170-9823	58	19
2530-01-170-9824	58	19
3110-01-171-1096	55	4
5365-01-171-1261	46	19
	48	39
4730-01-171-1974	52	1
2530-01-171-2208	54	9
5306-01-171-3975	66	48
5305-01-171-3980	48	8
5315-01-171-4015	67	10
	67	15
5310-01-171-5310	45	10
	55	29
3110-01-171-5322	55	45
5306-01-171-5896	48	16
5340-01-171-7935	48	44
4030-01-171-7956	59	14
5360-01-171-7984	61	27
5340-01-171-8007	52	7
	85	36
5330-01-171-8041	48	35
5340-01-171-8066	67	3
5306-01-171-8073	48	33
5305-01-171-8095	58	6
5310-01-171-8126	48	50
	73	38
	79	48
3120-01-171-8148	61	6
5306-01-171-8664	46	11
	79	36
5315-01-171-8835	55	28
6140-01-171-9451	43	7
6140-01-171-9495	44	2
6115-01-171-9654	26	1
6130-01-171-9784	26	6
5310-01-172-0027	67	19
5310-01-172-0529	67	22
4720-01-172-0593	59	11
3020-01-172-0667	55	12
5310-01-172-0957	47	8
5306-01-172-2523	61	26
	77	17
	86	19
5306-01-172-2547	55	15
5340-01-172-2691	20	2
5340-01-172-2800	59	16
6210-01-172-3131	71	6
5310-01-172-3284	61	8
6620-01-172-5497	33	6
5310-01-172-5573	66	61
5340-01-172-6380	61	11
5340-01-172-6438	61	9
5305-01-172-6455	54	16
3040-01-172-8286	18	6
2910-01-172-8320	18	5
6210-01-172-8352	33	3
5365-01-172-9473	61	2
6620-01-172-9965	23	4
5315-01-173-0396	48	19
2930-01-173-1353	21	5
2540-01-173-1368	74	7
5977-01-173-2815	29	15
6680-01-173-3267	33	7
6680-01-173-3277	41	3
5306-01-173-3497	66	53
5310-01-173-3610	45	19
	57	16
	61	30
	88	11
5310-01-173-3641	46	14
	48	11
	55	3
	56	28
	59	6
	61	28
	66	4
	66	47
	73	5
	74	5
	74	11
	75	3
	77	18
	78	31
	79	41
	79	52
	80	15
	81	30

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STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5310-01-173-3641	82	31	5340-01-174-3425	61	29
	84	15	7690-01-174-3676	73	10
	85	25	3930-01-174-3731	82	42
	86	18	2540-01-174-4143	82	11
	86	20	3930-01-174-4175	82	2
5365-01-173-3752	55	11	5306-01-174-4514	58	27
4710-01-173-4090	31	18	5310-01-174-4565	33	16
2920-01-173-4558	28	2	5310-01-174-4643	32	6
4320-01-173-4644	KITS		5305-01-174-4700	31	11
2590-01-173-4713	42	1	3930-01-174-5948	82	43
5310-01-173-6535	27	11	5310-01-174-6085	67	17
5310-01-173-6718	29	10	2540-01-174-6227	61	23
5306-01-173-6776	48	47	2610-01-174-7717	65	2
	66	5	2610-01-174-7718	64	2
5977-01-173-6812	29	13	5305-01-174-8217	80	2
5977-01-173-6929	29	11		81	12
2920-01-173-7687	32	15	5310-01-174-8243	1	9
5977-01-173-7832	26	10	5310-01-174-8244	43	6
5977-01-173-7877	26	9	5310-01-174-8245	56	13
4730-01-173-8590	23	6	5340-01-174-8365	2	2
6620-01-173-8804	40	3		3	4
5930-01-173-9020	40	1	5340-01-174-8438	71	18
4820-01-173-9510	32	11		79	57
2920-01-173-9614	32	14	5365-01-174-8449	82	24
6210-01-174-0090	73	18	5325-01-174-8812	73	23
5365-01-114-0591	78	4	4730-01-174-8948	40	2
6645-01-174-0860	33	1	3020-01-174-9330	75	20
9905-01-174-0954	73	3	3040-01-174-9341	71	13
	73	33	2920-01-174-9402	36	2
9905-01-174-0975	71	7	6140-01-174-9403	44	1
5930-01-174-1175	38	5	4730-01-174-9447	82	14
4820-01-174-2301	85	8	2920-01-174-9514	32	3
2940-01-174-2311	84	3	2920-01-174-9517	32	12
4810-01-174-2327	83	11	2530-01-174-9519	63	1
5315-01-174-2549	2	6	5310-01-175-0358	26	16
5315-01-174-2550	2	9	5305-01-175-0359	32	2
5315-01-174-2551	2	18	5306-01-175-0427	1	11
5315-01-174-2552	3	3	5340-01-175-0442	3	7
5306-01-174-2625	27	4	5365-01-175-0446	2	15
5310-01-174-2725	27	9	5365-01-175-0447	2	12
5310-01-174-2726	33	10	5330-01-175-0457	15	8
5310-01-174-2731	27	10	5330-01-175-0458	15	7
5310-01-174-2732	26	3	5330-01-175-0459	15	10
5307-01-174-2734	2	17	5330-01-175-0461	KITS	
5307-01-174-2735	2	13	5330-01-175-0462	9	23
5307-01-174-2736	2	14	5330-01-175-0463	3	11
5307-01-174-2737	3	5	5330-01-175-0464	8	4
5307-01-174-2738	30	4	5330-01-175-0465	7	9
5340-01-174-2754	18	10	5330-01-175-0466	9	8
5365-01-174-2784	18	3	5330-01-175-0467	14	11

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5330-01-175-0468	24	11	5340-01-175-4276	84	44
5330-01-175-0469	31	12	3930-01-175-5222	79	14
5330-01-175-0470	31	14	3040-01-175-5478	83	2
5330-01-175-0471	18	4	9905-01-175-5629	73	34
5330-01-175-0472	18	7	3040-01-175-6395	82	39
5306-01-175-0483	29	7	3930-01-175-6396	86	26
5305-01-175-0486	2	10	3040-01-175-6440	81	26
5306-01-175-0500	1	3	3930-01-175-6450	74	9
5306-01-175-0501	14	10	3040-01-175-6466	78	2
5305-01-175-0502	26	8	3040-01-175-6467	80	22
5305-01-175-0503	29	4	3040-01-175-6468	80	27
5305-01-175-0504	31	15	2940-01-175-6491	15	5
5305-01-175-0505	31	1	3040-01-175-6503	79	32
5310-01-175-0540	27	5		81	21
5340-01-175-0560	1	1	5306-01-175-6544	26	23
5340-01-175-0561	27	3	5306-01-175-6545	27	2
5340-01-175-0579	1	2	5340-01-175-6546	31	17
5365-01-175-0588	2	7	5315-01-175-6714	2	8
5365-01-175-0589	2	3	5360-01-175-6736	26	11
5365-01-175-0591	14	12	5360-01-175-6742	32	5
3120-01-175-0593	82	25	5306-01-175-6786	2	5
2610-01-175-0611	64	1	5305-01-175-6801	26	22
5310-01-175-0632	1	12	5305-01-175-6802	31	10
5315-01-175-0663	61	12	5306-01-175-6803	15	11
5365-01-175-0682	79	16	5340-01-175-6870	1	13
4730-01-175-1102	85	15	5340-01-175-6871	1	14
4730-01-175-1104	84	33	5305-01-175-6920	33	2
	84	34	5306-01-175-6930	43	8
4730-01-175-1105	86	15	5330-01-175-6976	41	4
2920-01-175-1119	32	1	5365-01-175-7011	77	11
3040-01-175-1156	56	9	5365-01-175-7012	79	2
2920-01-175-1166	29	16	4140-01-175-7081	25	1
2805-01-175-1289	3	1	4730-01-175-7201	12	17
2920-01-175-1293	32	4	4730-01-175-7368	12	13
2920-01-175-1391	29	2	5365-01-175-7382	27	6
2805-01-175-1409	1	15	4730-01-175-7408	12	82
2805-01-175-1420	1		4730-01-175-7422	14	8
6625-01-175-1699	33	5	4730-01-175-7423	14	9
4730-01-175-2540	9	9	4720-01-175-7685	85	18
3020-01-175-3202	79	20	5340-01-175-7798	1	8
5306-01-175-3614	1	10	5310-01-175-9278	73	20
5306-01-175-3615	33	9	5310-01-175-9279	73	14
5310-01-175-3707	79	33	5310-01-175-9291	78	13
	81	20	6680-01-176-0414	9	30
5310-01-175-3717	73	41	2530-01-176-0542	58	9
5310-01-175-3720	82	23	2530-01-176-0543	58	9
5315-01-175-3914	2	11	5340-01-176-0823	67	21
	7	22	3120-01-176-1018	1	7
5315-01-175-3915	2	16	3120-01-176-1019	29	9
5340-01-175-4276	68	12	3120-01-176-1020	29	19

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STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
3120-01-176-1021	71	12	5310-01-176-5875	56	20
3120-01-176-1022	78	9	5310-01-176-5876	78	24
3120-01-176-1023	79	56	5310-01-176-5877	79	34
3120-01-176-1024	80	21		81	19
5325-01-176-1049	71	24	5310-01-176-5883	86	3
4720-01-176-1065	87	1	5310-01-176-5884	86	8
4720-01-176-1066	87	5	3110-01-176-5926	79	28
5315-01-176-1104	72	2	2510-01-176-6019	71	23
5315-01-176-1105	77	15	3040-01-176-6096	78	25
5315-01-176-1111	82	20	4820-01-176-6098	70	1
3930-01-176-1198	80	12	4720-01-176-6327	85	22
5365-01-176-1292	80	13	5340-01-176-7364	61	7
5365-01-176-1293	82	33	5340-01-176-7414	73	22
4710-01-176-1298	86	22	5365-01-176-7425	78	16
4710-01-176-1299	17	1	5315-01-176-7447	56	21
4820-01-176-2768	85	1	5340-01-176-7466	79	15
3040-01-176-2772	81	2	5340-01-176-7469	78	14
3040-01-176-2773	83	17	5360-01-176-7480	80	10
4730-01-176-2803	80	9	5360-01-176-7481	81	27
4730-01-176-2806	68	1	5360-01-176-7482	85	9
4730-01-176-2807	68	20	5340-01-176-7496	77	22
4820-01-176-2808	85	2	5305-01-176-7669	24	2
4720-01-176-2810	68	19	5310-01-176-7741	8	16
2530-01-176-2853	56	7	5340-01-176-7867	56	31
2510-01-176-2854	71	4	5365-01-176-7870	9	16
3930-01-176-2855	82	7	5330-01-176-7920	83	12
2530-01-176-2856	83	7	5340-01-176-8159	78	8
4820-01-176-2857	85	7	5340-01-176-8166	82	38
4730-01-176-2858	85	35	5315-01-176-8204	78	29
4710-01-176-2859	86	28	5340-01-176-8208	86	23
2530-01-176-2923	56	10	5340-01-176-8440	12	24
5995-01-176-2930	34	1	4720-01-176-8472	84	29
2920-01-176-2931	35	1	4720-01-176-8473	85	29
5995-01-176-2932	36	1	4730-01-176-8481	13	6
4710-01-176-2996	84	41	4730-01-176-8482	15	4
5330-01-176-3932	80	29	2530-01-176-8539	63	6
4720-01-176-3934	15	3	2805-01-176-8559	10	5
5310-01-176-4002	84	6	2910-01-176-8560	12	77
	84	14	2910-01-176-8641	12	1
4720-01-176-4050	86	14	2805-01-176-8691	8	25
4720-01-176-4051	86	29	2910-01-176-8696	14	4
4720-01-176-4056	84	21	4710-01-176-8698	13	5
5315-01-176-4071	79	54	4730-01-176-8701	12	75
3040-01-176-4278	80	25	4730-01-176-9505	86	12
3040-01-176-4279	81	5	4720-01-176-9510	86	16
4810-01-176-4280	81	9	2805-01-176-9518	6	2
5985-01-176-4293	79	1	2530-01-176-9532	KITS	
5365-01-176-5770	82	32	2510-01-176-9556	71	11
5310-01-176-5831	80	11	2510-01-176-9557	74	8
4820-01-176-5857	70	3	2805-01-176-9569	4	6

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STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
2530-01-176-9579	56	8	3930-01-177-1015	79	17
2805-01-176-9581	7	3	5365-01-177-1042	6	8
2805-01-176-9582	4	10	5365-01-177-1065	87	6
2805-01-176-9583	5	5	4720-01-177-1068	84	27
3040-01-176-9585	9	7	4710-01-177-2211	18	9
2805-01-176-9588	5	1	2805-01-177-2391	10	7
2805-01-176-9589	7	21	3020-01-177-2442	5	6
3040-01-176-9604	83	1	2530-01-177-2493	63	12
2530-01-176-9624	56	25	4730-01-177-2503	85	6
5340-01-176-9795	85	37	5310-01-177-3400	79	18
5340-01-176-9796	85	28	5330-01-177-3405	16	4
3120-01-176-9803	81	13		88	1
5330-01-176-9862	KITS		5365-01-177-3428	82	18
5330-01-176-9863	KITS		5365-01-177-3429	85	5
5330-01-176-9864	KITS		4720-01-177-3501	85	33
5330-01-176-9865	KITS		4730-01-177-3754	9	13
5365-01-177-0091	79	23	4730-01-177-3774	80	4
	81	3	4730-01-177-3775	70	19
5340-01-177-0100	86	21	4730-01-177-3782	68	4
5306-01-177-0870	71	5	4820-01-177-3795	76	14
5310-01-177-0881	63	3	5310-01-177-3830	63	4
5310-01-177-0882	13	1	5310-01-177-3840	41	2
	18	1	5330-01-177-3845	63	8
	30	1	5330-01-177-3849	68	8
5310-01-177-0884	43	4		68	10
5310-01-177-0894	79	4		84	36
5310-01-177-0901	71	17		84	37
	79	58		87	3
	82	26	5330-01-177-3850	70	13
	82	41	5330-01-177-3851	70	17
	86	6	5340-01-177-3960	79	13
5310-01-177-0902	79	11	3020-01-177-3982	4	5
3110-01-177-0938	26	14	5365-01-177-4014	69	18
3110-01-177-0939	26	21	4730-01-177-4513	8	18
3110-01-177-0940	75	19	4720-01-177-4537	9	1
3110-01-177-0941	79	9	4730-01-177-4727	71	27
	82	34	2530-01-177-4888	62	3
3110-01-177-0942	79	43	2910-01-177-5392	84	23
	82	12	3020-01-177-5442	7	8
	82	29	5310-01-177-5903	71	21
3120-01-177-0944	78	7	5310-01-177-5904	73	26
5365-01-177-0945	4	11	5310-01-177-5912	72	3
5365-01-177-0946	4	4	5310-01-177-5914	71	14
4730-01-177-0970	84	28	5310-01-177-5915	78	23
4730-01-177-0971	85	30	5330-01-177-5916	68	2
4730-01-177-0972	84	13		68	16
4720-01-177-0974	68	15		68	21
4720-01-177-0975	84	48	5360-01-177-7524	58	13
4720-01-177-0976	84	43	5306-01-177-7944	9	17
3930-01-177-1014	71	1	5306-01-177-7945	9	18

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STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5306-01-177-8080	7	14	5306-01-177-9708	9	21
5306-01-177-8081	7	17	5305-01-177-9716	70	9
5306-01-177-8082	12	78	5305-01-177-9717	78	15
5310-01-177-8083	69	9	5315-01-177-9852	73	30
5365-01-177-8119	12	31	4820-01-178-0650	9	12
5360-01-177-8125	70	11	4720-01-178-0655	68	18
5360-01-177-8126	70	2	4720-01-178-0656	68	5
5360-01-177-8127	76	19	4720-01-178-0680	13	7
5360-01-177-8143	12	84	2805-01-178-0711	10	1
5330-01-177-8154	KITS		2805-01-178-0752	11	3
5330-01-177-8216	13	3	5330-01-178-1264	23	5
5330-01-177-8217	14	2	5305-01-178-1510	76	8
5306-01-177-8279	8	22	5305-01-178-1511	76	16
5306-01-177-8292	7	6	5307-01-178-1512	76	32
5306-01-177-8293	7	19	5306-01-178-1515	KITS	
5306-01-177-8294	7	27	5306-01-178-1632	4	14
5305-01-177-8296	8	23	5306-01-178-1633	5	3
3120-01-177-8311	4	12	5306-01-178-1634	5	4
5365-01-177-8317	11	2	5306-01-178-1635	6	5
5310-01-177-8322	7	12	5310-01-178-1639	8	1
5310-01-177-8323	8	21	5310-01-178-1658	76	33
5310-01-177-8324	8	15	5310-01-178-1659	76	34
5310-01-177-8325	9	15	5310-01-178-1660	6	4
5310-01-177-8326	11	7	5310-01-178-1661	7	18
5310-01-177-8327	12	59	5310-01-178-1662	8	24
5330-01-177-8336	76	13	5310-01-178-1663	9	20
5330-01-177-8337	83	14	5310-01-178-1664	9	26
5310-01-177-8351	9	19	5310-01-178-1665	11	6
5310-01-177-8352	10	4		27	8
5310-01-177-8358	11	5	5310-01-178-1666	11	8
4720-01-177-8393	16	11	5310-01-178-1667	12	54
5365-01-177-8401	13	4	5315-01-178-1670	4	9
5306-01-177-8414	28	1	5315-01-178-1671	4	3
5306-01-177-8415	41	1	5315-01-178-1672	7	4
5306-01-177-8416	42	2	5315-01-178-1673	10	8
5306-01-177-8417	56	19	5315-01-178-1686	8	14
	66	7	5360-01-178-1738	8	8
	71	8	5360-01-178-1739	8	13
5330-01-177-8445	88	13	5360-01-178-1740	76	7
4720-01-177-8477	84	19	5330-01-178-1806	83	6
4730-01-177-8506	16	14	5306-01-178-1829	3	8
5315-01-177-8510	69	2	5306-01-178-1830	3	9
5315-01-177-8511	83	16	3120-01-178-1881	4	12
5315-01-177-8512	82	19	3120-01-178-1882	4	12
2805-01-177-8561	7	10	3120-01-178-1883	6	6
3040-01-177-8562	77	25	3120-01-178-1884	6	7
2805-01-177-8587	11	9	3120-01-178-1885	6	7
2805-01-177-8611	6	3	3120-01-178-1886	6	7
2805-01-177-8612	7	2	5310-01-178-1922	4	13
5330-01-177-9693	KITS		5310-01-178-1923	8	2

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5310-01-178-1924	10	6	5306-01-178-3344	82	36
5310-01-178-1964	9	4	5306-01-178-3345	86	5
5340-01-178-2021	14	5	5330-01-178-3357	84	12
5305-01-178-2028	12	50	5330-01-178-3358	52	12
5365-01-178-2032	4	8		84	11
5340-01-178-2033	76	15	2805-01-178-3646	6	1
5365-01-178-2035	7	5	5306-01-178-3679	80	18
5340-01-178-2038	70	16	5306-01-178-3680	71	16
5340-01-178-2045	KITS			79	59
5306-01-178-2051	44	3		82	40
5306-01-178-2052	73	42	5306-01-178-3681	73	39
5306-01-178-2055	15	14		79	49
	43	11	5306-01-178-3682	79	12
5306-01-178-2056	10	3	5310-01-178-3698	80	32
5306-01-178-2057	9	10	5310-01-178-3699	69	6
5306-01-178-2058	73	6	5310-01-178-3700	63	15
	74	12		71	2
	78	32		80	20
	79	53	5330-01-178-3715	48	38
	82	30		70	5
	86	17	5330-01-178-3716	82	17
5306-01-178-2059	56	24	5330-01-178-3717	83	13
	57	2	5330-01-178-3718	83	10
	61	35	5330-01-178-3719	16	9
	73	17	5365-01-178-3773	77	12
	86	25	2805-01-178-4897	8	5
5306-01-178-2060	74	4	5365-01-178-5995	81	17
5306-01-178-2061	77	27	5306-01-178-6003	84	42
5306-01-178-2062	79	7	5306-01-178-6004	85	27
5330-01-178-2092	80	8	5330-01-178-6025	83	8
	84	24	5330-01-178-6026	85	3
	84	25		85	34
3120-01-178-2130	77	3	5306-01-178-6218	84	16
	77	6	4820-01-178-6477	16	15
	77	9	2910-01-178-6504	12	85
5365-01-178-2196	79	24	5340-01-178-6628	8	12
5365-01-178-2197	79	26	2990-01-178-6629	9	3
5340-01-178-2206	73	32	2910-01-178-6630	1	5
3020-01-178-2906	4	7		14	7
4730-01-178-2914	84	4	2530-01-379-6631	69	5
4730-01-178-2915	84	2	2530-01-178-6632	70	12
	85	13	4320-01-118-6650	76	30
4730-01-178-2916	84	22	2530-01-178-6658	56	11
4730-01-178-2949	16	10	3930-01-178-6664	76	2
2910-01-178-3007	KITS		3930-01-178-6665	76	5
2910-01-178-3008	KITS		3930-01-178-6666	76	10
2910-01-178-3009	12	37	3930-01-178-6667	76	25
3930-01-178-3046	79	50	4720-01-178-7012	19	4
5306-01-178-3344	63	17		43	3
	82	2	4720-01-178-7013	68	6

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STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
4720-01-178-7014	84	5	5310-01-179-4422	79	46
2590-01-178-7017	9	31	3110-01-179-4452	63	7
2805-01-178-7019	8	11	5315-01-179-4528	19	25
3040-01-178-7132	69	8	5315-01-179-4529	19	7
2910-01-178-7135	14	3	4730-01-179-5410	68	7
3040-01-178-7141	80	5		84	35
3040-01-178-7142	80	5		84	38
3930-01-178-7143	80	1	4730-01-179-5411	85	21
2805-01-178-7153	7	1		85	32
5340-01-178-7161	8	7	3930-01-179-5542	86	27
4730-01-178-7169	87	8	3020-01-179-5849	75	18
4730-01-178-7170	87	7	5305-01-179-5899	19	26
5306-01-178-7387	9	5	5340-01-179-5947	71	22
5306-01-178-7389	72	5	5340-01-179-5967	71	25
5306-01-178-7390	85	14	5365-01-179-5983	79	3
5306-01-178-7397	81	25		82	13
5340-01-178-7453	73	40		82	28
5340-01-178-8456	58	25	4730-01-179-6267	87	2
4720-01-178-8470	85	17	2530-01-179-6532	54	5
3930-01-178-8552	80	1	4710-01-179-6594	88	2
2530-01-178-8572	58	10	5365-01-179-9713	1	6
4320-01-178-8836	75	1	5340-01-179-9893	KITS	
4730-01-178-8837	70	15	4730-01-180-1816	16	13
	84	30	5310-01-180-2439	62	1
4730-01-178-8838	46	4	5306-01-180-4730	68	14
	48	13		77	24
	48	37		84	46
2590-01-178-8907	19	3	5306-01-180-4733	86	1
2530-01-178-8915	62	4	5310-01-180-4765	57	7
2940-01-178-8944	9	24	5365-01-180-5365	79	8
5340-01-178-9237	18	8		82	35
5306-01-178-9238	70	20	5306-01-180-6520	4	1
4730-01-178-9695	76	3	3120-01-180-6687	82	16
5315-01-178-9771	79	31	3020-01-180-7264	79	30
	81	24		81	23
2910-01-178-9909	14	1	5306-01-180-8678	84	7
5310-01-179-1121	69	3	5306-01-180-8680	73	25
5306-01-179-1122	75	2	4730-01-181-0097	84	32
5320-01-179-1192	73	2	4720-01-181-0100	85	12
5360-01-179-1221	76	17	4720-01-181-0111	71	26
5310-01-179-1285	69	7	4720-01-181-0112	84	1
5307-01-179-1301	76	31		85	38
5320-01-179-1366	12	23	2920-01-181-0148	29	1
5307-01-179-2374	84	9	3020-01-181-0326	79	22
3930-01-179-2605	78	1	3120-01-181-0786	82	9
4730-01-179-2909	87	4	4820-01-181-1852	76	18
4730-01-179-2913	84	31	3110-01-181-2566	79	5
4720-01-179-2935	16	5	3020-01-181-3392	7	7
2540-01-179-3117	19	24	5340-01-181-3561	73	11
2540-01-179-4003	74	1	5365-01-181-5095	16	8

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STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5340-01-181-5102	73	12	3040-01-186-5751	19	13
3020-01-181-6691	79	29	3040-01-186-5752	77	4
5306-01-181-7460	19	23	5355-01-186-9035	77	10
5306-01-181-7461	82	27	5340-01-186-9120	73	21
5306-01-181-7462	78	11	4320-01-186-9461	KITS	
5305-01-181-7926	80	7	2805-01-187-1308	8	3
	81	29	4820-01-187-1966	76	29
4720-01-182-2347	9	6	2590-01-187-2066	88	5
6220-01-182-2554	39	3	3040-01-188-3208	KITS	
5310-01-182-4095	19	22	3930-01-188-3270	69	15
	46	15	4820-01-188-3271	76	1
	56	27	3930-01-189-1610	33	14
	59	5		71	20
	61	10	4820-01-189-6607	KITS	
	77	19	5340-01-189-7776	81	28
	80	16	2520-01-190-2445	51	9
	81	31	2530-01-192-0534	60	1
	85	16	2530-01-192-6074	58	1
3020-01-182-5687	81	22	4720-01-192-8096	84	47
6220-01-182-5845	39	5	4730-01-192-8163	79	55
2910-01-182-6849	KITS			82	15
5307-01-182-7580	7	23	5930-01-193-5257	38	4
2920-01-182-7786	31	2	5306-01-193-6764	76	21
5305-01-182-8920	76	20	5310-01-193-6765	84	18
2805-01-182-9216	8	10	3110-01-194-5976	79	25
2510-01-183-0019	73	1	3110-01-194-5977	79	27
2520-01-183-2219	48	1	5306-01-194-6428	73	16
2590-01-183-2349	KITS		5306-01-195-3255	80	6
2530-01-183-2388	KITS		5305-01-195-5045	79	19
2805-01-183-2481	2	1	2920-01-195-7297	33	8
3930-01-183-2507	81	1	5360-01-197-0685	29	12
3120-01-183-5713	2	4	5360-01-200-1234	19	6
4310-01-184-3184	81	16	4710-01-203-0152	9	29
5310-01-184-5783	54	19	2805-01-203-1294	8	6
5315-01-184-5786	19	10	2805-01-203-2433	8	20
	77	13	4730-01-203-3769	15	2
5315-01-184-5787	63	2	3040-01-204-1278	77	16
3120-01-184-5847	19	14	2805-01-204-1281	6	1
5340-01-184-5904	71	10	5307-01-204-6761	11	10
5340-01-184-6531	86	30	3040-01-205-8807	77	1
2805-01-185-1158	6	2	5305-01-207-9337	33	15
5340-01-185-2168	16	3		73	13
3930-01-185-6709	82	8	2920-01-209-4614	31	16
4730-01-185-9488	16	12	3930-01-209-6039	78	5
4730-01-185-9489	16	6	5920-01-216-6121	38	1
2805-01-185-9529	7	25	5995-01-222-8739	37	1
5365-01-186-1786	83	3	3110-01-224-1359	55	16
5910-01-186-5077	32	9	5340-01-227-8694	79	39
4730-01-186-5624	9	2	5360-01-230-4568	51	12
2805-01-186-5642	9	14			

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	AE-09490-107	4730-01-171-1974	52	1
61888	AE-481J2400	5365-01-169-8360	48	23
61888	AE-661A1020		48	52
61888	AE09910-043	3120-01-169-7168	46	17
34623	A1007	3110-00-554-3197	48	20
61888	B-20121-30720		75	14
61888	B-20121-30801		75	5
61888	B-20121-30901		75	7
61888	B-20121-31101		75	8
61888	B-20121-31293	5306-01-179-1122	75	2
61888	B-20121-31401		75	15
61888	B-21001-00035		76	4
61888	B-21001-00106		76	24
61888	B-21001-00128	4730-01-178-9695	76	3
61888	B-21001-00689		76	22
61888	B-21011-30104	4320-01-178-6650	76	30
61888	B-21011-30507	5305-01-178-1511	76	16
61888	B-21011-30528	5305-01-178-1510	76	8
61888	B-21011-30603	5360-01-179-1221	76	17
61888	B-21011-30604	5360-01-177-8127	76	19
61888	B-21011-30618	5360-01-178-1740	76	7
61888	B-21011-30702	5340-01-178-2033	76	15
61888	B-21011-31011	4820-01-177-3795	76	14
61888	B-21011-31702	5330-01-177-8336	76	13
61888	B-21011-32404	4820-01-181-1852	76	18
61888	B-21011-32801		76	23
61888	B-21013-30011	3930-01-178-6667	76	25
61888	B-21013-30151	3930-01-178-6666	76	10
61888	B-21013-31380	3930-01-178-6665	76	5
61888	B-21013-31750	3930-01-178-6664	76	2
61888	B-21031-30103	5307-01-179-1301	76	31
61888	B-21031-30104	5307-01-178-1512	76	32
61888	B-21621-50501	5360-01-177-8125	70	11
61888	B-21731-30306	5360-01-177-8126	70	2
61888	B-21731-30403		70	6
61888	B-21731-30501	4820-01-176-5857	70	3
61888	B-21731-30601	5340-01-178-2038	70	16
61888	B-21731-30605	2530-01-178-6632	70	12
61888	B-21733-40201	4730-01-177-3775	70	19
61888	B-23441-04902		66	18
61888	B-23641-00516		66	35
61888	B-23641-03311		66	21
61888	B-23641-03702		66	25
61888	B-23641-03703		66	12
61888	B-23641-06601		66	17
61888	B-23641-06801		66	19
61888	B-23641-06901		66	20
61888	B-23642-00422		66	40
61888	B-23642-00722		66	22
61888	B-91511-08201	5305-01-177-9716	70	9
61888	B-93118-08652	5310-01-178-1659	76	34

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	B-93128-10082	5310-01-178-1658	76	33
61888	B-95133-00500		76	9
61888	BE-0839-49-686A	3120-01-168-9144	60	4
61888	BE-0839-49-698	2530-01-169-4941	60	2
61888	BE-2657-49-699	4730-01-169-2661	60	3
61888	BK-K700300813	5330-01-169-6755	53	3
61888	BK-708909000	2520-01-168-2135	51	7
61888	BK-7105039001	5360-01-169-6754	50	5
61888	BK1025166000	5315-01-168-8973	53	5
61888	BK6504420000	5310-01-167-2318	47	3
61888	BK7031018000		51	6
61888	BK7050003000		51	19
61888	BK7065021000		51	3
61888	BK7089001003	3040-01-169-9696	51	21
61888	BK7089002000	2520-01-168-1646	51	2
61888	BK7089004000		51	5
61888	BK7089005001	5360-01-168-5497	51	11
61888	BK7089006000	5360-01-230-4568	51	12
61888	BK7089010000	2520-01-190-2445	51	9
61888	BK7089011000	5365-01-168-5423	51	10
61888	BK7089012001	3020-01-170-4749	51	24
61888	BK7089013001	3020-01-170-4750	51	15
61888	BK7089014000	3120-01-168-9152	51	14
61888	BK7089015000	3120-01-168-5566	51	16
61888	BK7089020000		51	22
61888	BK7105038000		50	4
61888	BK7119041000	5365-01-167-6268	53	4
61888	BK7133021000	5365-01-168-9093	49	2
61888	BK7134001000		49	5
61888	BK7134002000		49	9
61888	BK7134003000		49	7
61888	BK7134004000	5360-01-168-5493	49	8
61888	BK7134005000	5360-01-168-5494	49	10
61888	BK7134006000		49	12
61888	BK7134007000	5360-01-168-5495	49	11
61888	BK7134008000	5340-01-168-9207	49	14
61888	BK7134011001	5360-01-168-5496	49	3
61888	BK7134013000	5330-01-168-3873	49	6
61888	BK7135001000		50	11
61888	BK7135002000		50	6
61888	BK7135003000		50	7
61888	BK7135007000		50	3
61888	BK7135009000		50	13
61888	BK7135010000		50	14
61888	BK7135013000	4820-01-169-9600	50	9
61888	BK7135015000		50	8
61888	BK7304001000		53	8
61888	BK7304002000		53	12
61888	BK7304003000		53	11
61888	BK7304005000	3040-01-169-7656	53	9
61888	BK7304006000		53	13

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	BK7304008000		53	7
61888	BK7304012000		53	14
61888	BK7501024000	2520-01-167-7184	51	8
61888	BK7753033000		51	4
61888	BK8051072000	5306-01-168-9895	50	16
61888	BK8051400800	5305-01-170-3771	47	2
61888	BK8052092530	5306-01-170-3723	53	2
61888	BK8054071400	5306-01-168-8972	49	13
61888	BK8059090800	5305-01-168-5424	51	20
61888	BK8059940700	5365-01-169-6532	50	12
61888	BK8101607010		50	10
61888	BK8105009030		53	6
61888	BK8111301640	3110-01-168-9074	51	23
61888	BK8112151310		53	10
61888	BK8113301610	3110-01-168-9078	51	17
61888	BK8131010350		50	2
61888	BK8131030100		51	18
61888	BK8131040060		51	13
61888	B20121-31001		75	6
61888	C52-10901-64550	5310-01-168-5579	58	23
61888	C52-10901-64560	5330-01-168-9167	58	22
61888	C52-11003-05143	2530-01-168-9350	58	12
61888	C52-11105-54110	5360-01-169-7127	58	21
61888	C52-11204-69010	5340-01-178-8456	58	25
61888	C52-11218-15151	2530-01-170-2579	58	18
61888	C52-11218-15161	5360-01-168-5616	58	17
61888	C52-11218-25151	2530-01-170-0839	58	18
61888	C52-11218-25161	5360-01-168-5617	58	17
61888	C52-11232-54540	5360-01-168-9106	58	14
61888	C52-11239-51270	2530-01-178-8572	58	10
61888	C52-11242-13300	2530-01-170-9823	58	19
61888	C52-11242-14500	2530-01-170-2580	58	24
61888	C52-11242-14530	2530-01-168-9407	58	15
61888	C52-11242-23300	2530-01-170-9824	58	19
61888	C52-11242-24500	2530-01-170-0840	58	24
61888	C52-11242-24530	2530-01-168-9595	58	15
61888	C52-11242-54010	5360-01-177-7524	58	13
61888	C52-11242-54011	5360-01-170-3738	58	13
61888	C52-11242-55090	5360-01-168-5498	58	11
61888	C52-11242-73000		58	8
61888	C52-11242-83010	2530-01-176-0542	58	9
61888	C52-11242-83020	2530-01-176-0543	58	9
61888	C52-11246-11000		58	2
61888	C52-11246-21000		58	2
61888	C52-11246-52001	2530-01-168-3698	58	28
61888	C52-11246-54071		58	16
61888	C52-11246-54602	4010-01-168-9140	58	3
61888	C52-51302-53840	5340-01-170-4546	58	20
61888	C52-51308-54160	5315-01-169-7033	58	26
61888	C90-0567-0820	5306-01-174-4514	58	27
61888	C90-9200-0800	5340-01-169-5420	58	4

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
81349	F02A125V10AS	5920-00-879-6285	38	3
81349	F03A125V30A	5920-00-539-6920	38	2
81348	GP1/TYC/815/28X9 -15/F/FL/ROCKLUG	2610-01-175-0611	64	1
81348	GPIC/6.50-01/E/F LTR	2610-00-246-2829	65	1
81348	GP5/6.50-10/TR15 OCW/OFF CENTER	2610-01-174-7717	65	2
55883	IDP4M1833		75	17
96906	MS15006-4	4730-00-172-0058	61	1
96906	MS16562-232	5315-00-664-6213	48	14
96906	MS16624-1255	5365-00-663-2215	79	21
96906	MS171558	5315-01-154-3202	19	19
96906	MS19059-2414	3110-00-100-6151	46	1
96906	MS24665-283	5315-00-842-3044	59	3
96906	MS24665-300	5315-00-234-1863	88	7
96906	MS24665-353	5315-00-839-5822	61	14
96906	MS24665-359	5315-00-013-7214	79	35
96906	MS24665-368	5315-00-236-8357	57	4
			73	27
96906	MS24665-639	5315-00-852-4113	57	20
96906	MS28775-236	5330-00-579-6861	84	10
96906	MS3367-4-9	5975-00-727-5153	19	2
			33	13
96906	MS35338-71	5310-00-011-6125	66	60
96906	MS35340-45	5310-00-959-4679	7	16
			9	11
			13	2
			15	15
			16	2
			19	17
			21	11
			27	7
			30	2
			30	5
			43	12
			45	12
			56	23
			57	3
			61	34
			68	13
			70	7
			73	19
			74	2
			77	21
			84	40
			84	45
			86	24
			88	3
61888	N-00921-22510	5315-01-178-1686	8	14
61888	N-00926-41600	5315-01-178-1672	7	4

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	N-00926-51600	5315-01-178-1670	4	9
61888	N-01648-00084	5340-01-174-8365	2	2
			3	4
61888	N-08110-61262	5306-01-177-7945	9	18
61888	N-08110-61462	5306-01-177-9708	9	21
61888	N-08110-62562	5306-01-177-7944	9	17
61888	N-08110-81225	5305-01-175-0504	31	15
61888	N-08110-81626	5305-01-175-0505	31	1
61888	N-08110-82062	5306-01-177-8293	7	19
61888	N-08110-83062	5306-01-167-2310	7	20
			23	1
61888	N-08110-85510	5306-01-177-8081	7	17
61888	N-08120-61262	5306-01-167-2285	23	9
61888	N-08120-61410	5306-01-178-2056	10	3
61888	N-08120-61662	5306-01-177-8292	7	6
61888	N-08120-62062	5306-01-180-6520	4	1
61888	N-08120-62262	5305-01-175-6802	31	10
61888	N-08120-62562	5306-01-177-8294	7	27
61888	N-08120-63562	5306-01-167-2311	7	11
			7	26
			25	5
61888	N-08120-82200	5306-01-178-2057	9	10
61888	N-08120-83510	5306-01-169-2062	11	11
61888	N-08120-83525	5306-01-175-0501	14	10
61888	N-08120-86062	5306-01-168-5544	24	5
61888	N-08121-01662	5306-01-175-0500	1	3
61888	N-08130-80510	5306-01-174-2625	27	4
61888	N-08131-02510	5306-01-175-0427	1	11
61888	N-08131-02810	5306-01-178-1633	5	3
61888	N-08190-80410	5306-01-178-7387	9	5
61888	N-08213-85010	5307-01-174-2736	2	14
61888	N-08213-86010		11	12
61888	N-08216-61410	5307-01-182-7580	7	23
61888	N-08223-83010	5307-01-204-6761	11	10
61888	N-08223-83210	5307-01-174-2737	3	5
61888	N-08227-03010	5307-01-174-2734	2	17
61888	N-08227-24010	5307-01-174-2738	30	4
61888	N-08360-51014		27	1
61888	N-08360-61226	5305-01-174-4700	31	11
61888	N-08723-11400	4730-01-176-8481	13	6
61888	N-08723-11600	4730-01-173-8590	23	6
61888	N-08911-10510	5310-01-173-6535	27	11
61888	N-08911-14010	5310-01-167-3992	24	7
61888	N-08911-20610	5310-01-178-1663	9	20
61888	N-08911-20810	5310-01-178-1665	11	6
			27	8
61888	N-08911-24010	5310-01-178-1664	9	26
			30	3
61888	N-08911-30810	5310-01-177-0882	13	1
			18	1
			30	1

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	N-08915-13510	5310-01-174-2731	27	10
61888	N-08915-13600	5310-01-177-8352	10	4
61888	N-08915-13610	5310-01-177-8351	9	19
61888	N-08915-13810		18	2
61888	N-08915-14010	5310-01-168-5577	7	13
			9	27
			24	6
61888	N-08915-24010	5310-01-175-0632	1	12
			5	2
61888	N-08915-43510	5310-01-174-2725	27	9
61888	N-08915-43810	5310-01-175-0540	27	5
61888	N-08915-44010	5310-01-177-8323	8	21
			9	28
			30	6
61888	N-08915-53810	5310-01-177-8326	11	7
61888	N-08916-13600	5310-01-178-1924	10	6
61888	N-08918-10810	5310-01-178-1666	11	8
61888	N-08921-32510	5315-01-178-1673	10	8
61888	N-08931-30210	5365-01-175-0446	2	15
			11	4
61888	N-08931-30410	5365-01-175-0447	2	12
61888	N-08931-30610	4730-01-170-7071	3	6
			3	10
			24	9
61888	N-10004-14600	5340-01-175-0579	1	2
61888	N-10006-32200	5340-01-175-0560	1	1
61888	N-10101-L1125	5330-01-175-0461	KITS	
61888	N-10103-48220	2805-01-175-1420	1	
61888	N-11010-K7201	2805-01-183-2481	2	1
61888	N-11019-32200	5365-01-175-0588	2	7
61888	N-11023-32200	5315-01-175-3914	2	11
			7	22
61888	N-11023-78200	5315-01-175-3915	2	16
61888	N-11024-K0100	5315-01-174-2549	2	6
61888	N-11024-78200	5315-01-174-2550	2	9
61888	N-11026-61000	5310-01-177-8325	9	15
61888	N-11035-30000	5310-01-178-1964	9	4
61888	N-11042-B8655	2805-01-175-1289	3	1
61888	N-11044-P5101	5330-01-175-0463	3	11
61888	N-11056-78200	5306-01-178-1829	3	8
61888	N-11057-78200	5306-01-178-1830	3	9
61888	N-11060-B8501	4730-01-168-8688	23	3
61888	N-11062-S3001	5330-01-178-1264	23	5
61888	N-11063-Y4400		3	2
61888	N-11065-24000	5315-01-174-2552	3	3
61888	N-11065-30000	4730-01-175-2540	9	9
61888	N-11099-P0502	5340-01-175-0442	3	7
61888	N-11110-35202	2805-01-186-5642	9	14
61888	N-11121-E0700		9	22
61888	N-11128-69200	5365-01-176-7870	9	16
61888	N-11213-K7215	5340-01-175-6870	1	13

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	N-11214-K7215	5340-01-175-6871	1	14
61888	N-11712-L6800	5365-01-175-7382	27	6
61888	N-11715-L1103	5340-01-175-0561	27	3
61888	N-11720-L1102	3030-00-864-7398	25	3
61888	N-11810-A3501	4820-01-178-0650	9	12
61888	N-11826-L1100	4720-01-177-4537	9	1
61888	N-11828-L1100	4720-01-182-2347	9	6
61888	N-12010-R9001	2805-01-178-3646	6	1
61888	N-12010-R9004	2805-01-204-1281	6	1
61888	N-12030-32200	3120-01-178-1883	6	6
61888	N-12032 25501	5365-01-177-1042	6	8
61888	N-12033-R9000	2805-01-185-1158	6	2
61888	N-12036-R9000	2805-01-176-9518	6	2
61888	N-12100-P5100	2805-01-177-8611	6	3
61888	N-12109-E0701	5306-01-178-1635	6	5
61888	N-12113-78201	5310-01-178-1660	6	4
61888	N-12118-P5112	3120-01-178-1886	6	7
61888	N-12200-78200	2805-01-176-9582	4	10
61888	N-12207-E0702	3120-01-178-1881	4	12
61888	N-12210-E0702	3120-01-177-8311	4	12
61888	N-12279-32200		2	20
61888	N-12289-14600		2	19
61888	N-12293-P0500	5306-01-175-6786	2	5
61888	N-12299-32200	5365-01-178-2032	4	8
61888	N-12302-32200	2805-01-176-9569	4	6
61888	N-12303-L1101		4	2
61888	N-12307-48201	5365-01-177-0946	4	4
61888	N-12308-L1101	5310-01-178-1922	4	13
61888	N-12309-78200	5306-01-178-1632	4	14
61888	N-12310-K7215	2805-01-176-9583	5	5
61888	N-12312-L1101	3020-01-177-2442	5	6
61888	N-12315-78200	5306-01-178-1634	5	4
61888	N-12351-L1100	3020-01-177-3982	4	5
61888	N-12352-L1101	3020-01-174-9330	75	20
61888	N-12353-L1101	3020-01-179-5849	75	18
61888	N-12354-L6801	3110-01-177-0940	75	19
61888	N-13001-78201	2805-01-176-9581	7	3
61888	N-13010-78201	5365-01-178-2035	7	5
61888	N-13012-78200	5306-01-177-8080	7	14
61888	N-13013-78200	5310-01-177-8322	7	12
61888	N-13021-73601	3020-01-178-2906	4	7
61888	N-13022-48200	5315-01-178-1671	4	3
61888	N-13024-78201	3020-01-177-5442	7	8
61888	N-13028-73600	3020-01-181-3392	7	7
61888	N-13033-L1103	2805-01-176-9589	7	21
61888	N-13042-L1401		7	28
61888	N-13070-32200	2805-01-177-8561	7	10
61888	N-13079-32200	5330-01-175-0465	7	9
61888	N-13081-78200	5305-01-175-0486	2	10
61888	N-13201-P0500	2805-01-182-9216	8	10
61888	N-13202-P5100	2805-01-178-7019	8	11

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	N-13203-T7200	5360-01-178-1738	8	8
61888	N-13207-66712		8	9
61888	N-13209-08000	5340-01-178-7161	8	7
61888	N-13210-B8501	2805-01-203-1294	8	6
61888	N-13222-78200	5340-01-178-6628	8	12
61888	N-13223-78200		8	19
61888	N-13224-78200	5306-01-177-8279	8	22
61888	N-13226-78200	5305-01-177-8296	8	23
61888	N-13231-78201	2805-01-177-8612	7	2
61888	N-13234-78200	2805-01-176-8691	8	25
61888	N-13235-78200	5310-01-178-1662	8	24
61888	N-13238-12200	2805-01-178-7153	7	1
61888	N-13252-32200		8	17
61888	N-13254-58000	4730-01-177-4513	8	18
61888	N-13255-58000	5310-01-176-7741	8	16
61888	N-13256-58000	5360-01-178-1739	8	13
61888	N-13258-78201	2805-01-203-2433	8	20
61888	N-13259-78201	2805-01-178-4897	8	5
61888	N-13264-L1100	2805-01-187-1308	8	3
61888	N-13270-E3400	5330-01-175-0464	8	4
61888	N-13274-B1101	5310-01-178-1639	8	1
61888	N-13275-E0702	5310-01-178-1923	8	2
61888	N-13289-58000	5310-01-177-8324	8	15
61888	N-13501-L1103	2805-01-185-9529	7	25
61888	N-13520-L1100		7	15
61888	N-13521-L1100		7	24
61888	N-14003-L1100	2805-01-178-0752	11	3
61888	N-14004-L1101	2805-01-177-8587	11	9
61838	N-14008-L1400	4730-01-177-3754	9	13
61888	N-14034-14600	5365-01-177-8317	11	2
61888	N-14035-88500		11	1
61888	N-14037-N3600	5310-01-177-8358	11	5
61888	N-14049-L1100	4320-01-167-9216	24	10
61888	N-14052-L1102	5340-01-168-5679	23	8
61838	N-14053-L1100	5330-01-167-2303	23	7
61888	N-14054-L1100	4720-01-167-4325	23	11
61888	N-14055-L1100	4720-01-167-4326	23	10
61888	N-14059-85000	4320-01-167-9215	24	8
61838	N-14330-L1100	5365-01-177-8401	13	4
61888	N-14331-L1100	4710-01-176-8698	13	5
61888	N-14334-47705	4720-01-178-0680	13	7
61888	N-15010-76000	2805-01-178-0711	10	1
61888	N-15020-78205		10	2
61888	N-15040-61000	3040-01-176-9585	9	7
61888	N-15042-20100	3120-01-183-5713	2	4
61888	N-15050-78200	2805-01-176-8559	10	5
61888	N-15066-78200	5330-01-175-0466	9	8
61888	N-15132-58001	2805-01-177-2391	10	7
61888	N-15140-74002	6680-01-176-0414	9	30
61888	N-15146-12201	4710-01-203-0152	9	29
61888	N-15238-78200	2940-01-178-8944	9	24

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	N-15239-E0700	5330-01-175-0462	9	23
61888	N-15255-85030	2590-01-178-7017	9	31
61888	N-15262-L1100	2990-01-178-6629	9	3
61888	N-15270-B3400		9	32
61888	N-16010-L6803	2910-01-176-8647	12	1
61888	N-16011-L1100		12	2
61888	N-16031-U0600		12	44
61888	N-16031-48216		12	34
61888	N-16033-K7201		12	32
61888	N-16049-21605		12	76
61888	N-16054-A8601		12	18
61888	N-16054-L0715		12	29
61888	N-16060-31300		12	71
61888	N-16061-84700		12	27
61888	N-16062-K7201	5320-01-179-1366	12	23
61888	N-16063-11201	5340-01-176-8440	12	24
61888	N-16072-L1100	5310-01-177-8327	12	59
61888	N-16081-84700		12	11
61888	N-16092-74500		12	70
61888	N-16094-21600		12	72
61888	N-16098-N0100		12	74
61888	N-16101-K7201	4730-01-175-7408	12	82
61888	N-16108-A3501	5306-01-177-8082	12	78
61888	N-16111-L1100		12	46
	4730-01-176-8701		12	75
61888	N-16114-74505		12	39
61888	N-16123-L1100		12	61
61888	N-16124-31300	5310-01-178-1667	12	54
61888	N-16128-L1100		12	60
61888	N-16133-A6111		12	62
61888	N-16138-A8900	2910-01-176-8560	12	77
61888	N-16138-J0110		12	69
61888	N-16143-32200		12	6
61888	N-16144-A8600		12	48
61888	N-16145-31301		12	40
61888	N-16160-L1100	5360-01-177-8143	12	84
61888	N-16165-J2400	2910-01-178-6504	12	85
61888	N-16172-37000	5305-01-178-2028	12	50
61888	N-16174-L6200	5330-01-177-8216	13	3
61888	N-16192-L1100		12	56
61888	N-16193-21600		12	38
61888	N-16195-69200		12	8
61888	N-16224-08100		12	21
61888	N-16245-35000		12	67
61888	N-16248-L1100		12	3
61888	N-16272-B8201	5365-01-177-8119	12	31
61888	N-16277-L1100		12	57
61888	N-16285-84700		12	14
61888	N-16286-A8600	4730-01-175-7201	12	17
61888	N-16286-74505	4730-01-175-7368	12	13
61888	N-16293-L1100	2910-01-178-3009	12	37

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	N-16310-48216		12	16
61888	N-16337-L0715		12	45
61888	N-16338-B5900		12	47
61888	N-16394-0202P		12	68
61888	N-16397-L1100		12	65
61888	N-16402-K4046	2910-01-176-8696	14	4
61888	N-16405-10400		14	6
61888	N-16407-32200	5330-01-177-8217	14	2
61888	N-16420-A0600	5365-01-175-0591	14	12
61888	N-16440-35210	5340-01-178-2021	14	5
61888	N-16455-A3501	2910-01-178-3008	KITS	
61888	N-16465-80100	5340-01-179-9893	KITS	
61888	N-16475-B0100	2910-01-178-3007	KITS	
61888	N-16486-U0600		12	42
61888	N-16509-99009		15	13
61888	N-16516-L1100	5306-01-175-6803	15	11
61888	N-16518-99003	5330-01-175-0459	15	10
61888	N-16526-L1100		15	6
61888	N-16528-L1101		15	12
61888	N-16530-K7216		15	1
61888	N-16531-L1101	4730-01-203-3769	15	2
61888	N-16546-L3000	2940-01-159-0956	15	9
61888	N-16548-L1100	5330-01-175-0457	15	8
61888	N-16560-L1100	4730-01-176-8482	15	4
61888	N-16572-10801	4730-01-186-5624	9	2
61888	N-16713-0101P	5330-01-175-0458	15	7
61888	N-16903-L1100	4710-01-167-9288	23	12
61888	N-17010-L1101	2910-01-178-9909	14	1
61888	N-17078-32200	2910-01-178-6630	1	5
			14	7
61888	N-17099-21002	5330-01-175-0467	14	11
61888	N-17103-C0600	4730-01-175-7422	14	8
61888	N-17103-K5001	4730-01-175-7423	14	9
61888	N-17522-L1100	4710-01-176-1299	17	1
61888	N-19100-K7255	2910-01-172-8320	18	5
61888	N-19110-K7215	3040-01-172-8286	18	6
61888	N-19157-L0700	5330-01-175-0471	18	4
61888	N-19159-K0100	5330-01-175-0472	18	7
61888	N-19170-L1100	5365-01-174-2784	18	3
61888	N-19180-L0100	5340-01-178-9237	18	8
61888	N-19320-L1100	4710-01-177-2211	18	9
61888	N-21010-L1125	2930-01-168-2003	24	1
61888	N-21012-25500	5305-01-176-7669	24	2
61888	N-21013-78202	5365-01-168-3204	24	3
61888	N-21014-78202	5330-01-167-2304	24	4
61888	N-21051-E0100	3020-01-167-9278	25	2
61888	N-21060-48210	4140-01-175-7081	25	1
61888	N-21064-J5000	5365-01-168-3205	25	4
61888	N-21074-69200	5330-01-175-0468	24	11
61888	N-21077-Y4400	5307-01-174-2735	2	13
61888	N-21200-H7800	6620-01-172-9965	23	4

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	N-22100-K7201	2920-01-175-1119	32	1
61888	N-22102-D1100	5910-01-186-5077	32	9
61888	N-22108-71302		32	7
61888	N-22109-71300	2920-01-175-1293	32	4
61888	N-22110-K7201	5360-01-175-6742	32	5
61888	N-22119-71300		32	10
61888	N-22132-20605	2920-01-174-9514	32	3
61888	N-22136-H2300	2920-01-174-9517	32	12
61888	N-22157-H1001	2920-01-159-0869	32	16
61888	N-22160-M0800	5310-01-174-4643	32	6
61888	N-22162-N8800		32	17
61888	N-22165-30101		32	18
61888	N-22178-73600		31	13
61888	N-22179-E3000	5330-01-175-0470	31	14
61888	N-22180-71200	5330-01-175-0469	31	12
61888	N-22182-71300	2920-01-173-9614	32	14
61888	N-22183-71300	2920-01-173-7687	32	15
61888	N-22301-K7201	4820-01-173-9510	32	11
61888	N-22318-25501	4710-01-173-4090	31	18
61888	N-22403-18005		32	8
61888	N-22431-10560		31	4
61888	N-22433-L1110	2920-01-209-4614	31	16
61888	N-22435-L1101	5340-01-175-6546	31	17
61888	N-22450-L1051	2920-01-182-7786	31	2
61888	N-22450-Y4401		31	3
61888	N-22451-66001		31	8
61888	N-22452-66001		31	7
61888	N-22453-66001		31	6
61888	N-22454-80001		31	5
61888	N-22472-G0302	5340-01-174-2754	18	10
61888	N-22750-H2300	5305-01-175-0359	32	2
61888	N-23100-M0413	6115-01-171-9654	26	1
61888	N-23102-U0110		26	13
61888	N-23108-M0412		26	15
61888	N-23115-A5510	5305-01-175-6801	26	22
61888	N-23118-U0110		26	19
61888	N-23120-W1710	3110-01-177-0939	26	21
61888	N-23120-14610	3110-01-177-0938	26	14
61888	N-23127-U0111		26	2
61888	N-23131-U0110	5306-01-175-6544	26	23
61888	N-23133-P4510	5977-01-173-7877	26	9
61888	N-23135-P4510	5977-01-173-7832	26	10
61888	N-23138-A5510	5360-01-175-6736	26	11
61888	N-23141-P4510	5305-01-175-0502	26	8
61888	N-23150-B9810		26	17
61888	N-23153-M0412	5310-01-175-0358	26	16
61888	N-23158-U0110	5310-01-174-2732	26	3
61888	N-23164-H0100	5306-01-175-6545	27	2
61888	N-23170-P4510		26	5
61888	N-23230-U0110	6130-01-171-9784	26	6
61888	N-23300-P5113	2920-01-181-0148	29	1

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	N-23302-P5110		29	14
61888	N-23310-B6010		29	3
61888	N-23312-Y0511		29	17
61888	N-23318-P5112		29	18
61888	N-23319-M0110	3120-01-176-1020	29	19
61888	N-23322-Y0510		29	20
61888	N-23337-P0610		29	8
61888	N-23338-P0610	3120-01-176-1019	29	9
61888	N-23340-86010	5306-01-175-0483	29	7
61888	N-23378-E3011	5977-01-173-6929	29	11
61888	N-23380-E3010	5977-01-173-2815	29	15
61888	N-23380-U0110	5977-01-173-6812	29	13
61888	N-23460-B5010	5310-01-173-6718	29	10
61888	N-23465-P0610	2920-01-175-1166	29	16
61888	N-23475-E3010		29	21
61888	N-23480-M0110	5305-01-175-0503	29	4
61888	N-23500-L0411	2920-01-173-4558	28	2
61888	N-24210-89944	5340-01-168-5586	23	2
61888	N-25080-89900	6620-01-173-8804	40	3
61888	N-25240-89910	5930-01-173-9020	40	1
61888	N-25251-37700	4730-01-174-8948	40	2
61888	N-30401-L1001	2805-01-176-9588	5	1
61888	N-30412-P5100	5315-01-175-6714	2	8
61888	N-30413-61700	5315-01-174-2551	2	18
61888	N-32202-30000	5365-01-177-0945	4	11
61888	N23333-M1510	5360-01-197-0685	29	12
61888	N23343-Y0513	2920-01-175-1391	29	2
70040	PF34	2940-01-150-9445	9	25
19728	SRP-2227		32	13
06383	SST2	5975-00-074-2072	43	1
53421	T50R	5975-01-084-0977	68	11
81348	W-L-00111/61	6240-00-013-1282	33	4
61888	Z-9-0911-0508-0	5310-01-178-1661	7	18
81348	ZZ-I-550/815/28X 9-15/TR77A/ONCTR	2610-01-174-7718	64	2
61888	01000-06010	5305-01-182-8920	76	20
61888	01030-04012	5305-01-175-6920	33	2
61888	01030-06016	5305-01-179-5899	19	26
61888	01066-10012	5305-01-177-9717	78	15
61888	01100-04016	5306-01-175-3615	33	9
61888	01100-05012	5306-01-177-8415	41	1
61888	01100-06010	5306-01-177-8416	42	2
61888	01100-06012	5306-01-178-2061	77	27
61888	01100-06016	5306-01-177-8414	28	1
61888	01100-06020	5306-01-178-6004	85	27
61888	01100-06025	5306-01-169-4424	20	3
61888	01100-08012	5306-01-178-2055	15	14
			43	11
61888	01100-08014	5306-01-167-2284	21	10
61888	01100-08015	5306-01-178-2059	56	24
			57	2

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	01100-08015	5306-01-178-2059	61	35
			73	17
			86	25
61888	01100-08020	5306-01-169-7032	16	1
			19	20
			57	10
			70	14
			88	4
61888	01100-08025	5306-01-180-4730	68	14
			77	24
			84	46
61888	01100-08030	5306-01-169-0675	21	4
61888	01100-08035		45	17
61888	01100-10016	5306-01-178-2060	74	4
61888	01100-10020	5306-01-178-2058	73	6
			74	12
			78	32
			79	53
			82	30
			86	17
61888	01100-10025	5306-01-170-3178	55	2
			79	42
			85	24
61888	01100-10030	5306-01-173-6776	48	47
			66	5
61888	01100-10035	5306-01-170-4551	48	10
			59	9
61888	01100-10040	5306-01-172-2523	61	26
			77	17
			86	19
61888	01100-10050	5306-01-171-8664	46	11
			79	36
61888	01100-10055	5306-01-169-0066	20	7
61888	01100-12025	5306-01-178-3344	63	17
			82	22
			82	36
61888	01100-12030	5306-01-177-8417	56	19
			66	7
			71	8
61888	01100-12040	5306-01-178-2062	79	7
61888	01100-12080	5306-01-178-3679	80	18
61888	01100-16065	5306-01-178-3680	71	16
			79	59
			82	40
61888	01100-16070	5306-01-178-3345	86	5
61888	01100-20080		71	15
61888	01103-06055	5306-01-178-9238	70	20
61888	01103-08020	5306-01-171-8073	48	33
			55	34
61888	01103-08025	5305-01-169-0072	47	7
			48	26

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	01103-08035	5306-01-171-5896	48	16
61888	01103-08050	5306-01-170-3176	48	27
61888	01103-08055	5306-01-170-3175	48	40
61888	01103-10025	5306-01-173-3497	66	53
61888	01103-10040	5306-01-169-0676	45	5
61888	01103-10050	5306-01-169-0684	46	12
61888	01103-10055	5306-01-169-2899	46	13
61888	01103-10075	5306-01-169-0683	46	6
61888	01103-10090	5306-01-175-3614	1	10
61888	01103-12035	5306-01-178-3681	73	39
			79	49
61888	01103-14055	5306-01-181-7462	78	11
61888	01103-16040	5306-01-181-7461	82	27
61888	01103-16045	5306-01-178-3682	79	12
61888	01103-20050	5305-01-195-5045	79	19
61888	01106-08030	5306-01-178-6003	84	42
61888	01106-08040	5306-01-169-0678	46	10
61888	01106-08045	5306-01-169-0679	46	9
61888	01106-10058	5306-01-171-3975	66	48
61888	01106-12040	5306-01-170-4553	48	51
61888	01106-12055	5306-01-170-3177	48	49
61888	01109-10020	5306-01-180-8680	73	25
61888	01109-10025	5306-01-194-6428	73	16
61888	01110-30180	5306-01-178-7389	72	5
61888	01120-08030	5306-01-170-4556	61	31
61888	01120-10035	5306-01-181-7460	19	23
61888	01120-10050	5306-01-178-7390	85	14
61888	01170-06018	5306-01-193-6764	76	21
61888	01400-00004	5310-01-174-4565	33	16
61888	01400-00006	5310-01-169-8257	19	12
			20	6
			28	4
61888	01400-00008	5310-01-169-8258	19	16
			45	11
			70	8
			74	3
			77	20
			84	39
			88	12
61888	01400-00010	5310-01-182-4095	19	22
			46	15
			56	27
			59	5
			61	10
			77	19
			80	16
			81	31
			85	16
61888	01400-00012	5310-01-178-3700	63	15
			71	2
			80	20

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	01400-00018	5310-01-176-5877	79	34
			81	19
61888	01400-00022	5310-01-172-5573	66	61
61888	01400-00024	5310-01-172-0529	67	22
61888	01400-10010	5310-01-171-5310	45	10
			55	29
61888	01400-10014	5310-01-176-5876	78	24
61888	01400-10020	5310-01-184-5783	54	19
61888	01402-00006	5310-01-180-4765	57	7
61888	01402-00008	5310-01-173-3610	45	19
			57	16
			61	30
			88	11
61888	01402-00010	5310-01-193-6765	84	18
61888	01402-00012	5310-01-176-5875	56	20
61888	01402-00014	5310-01-169-5549	66	58
61888	01402-00022	5310-01-169-5550	67	24
61888	01402-00024	5310-01-178-3699	69	6
61888	01402-10010	5310-01-170-8507	66	55
61888	01405-00010	5310-01-172-3284	61	8
61888	01407-00008	5310-01-169-7105	45	14
61888	01407-00022	5310-01-169-5551	67	20
61888	01412-00030	5310-01-177-0881	63	3
61888	01412-10016	5310-01-169-2907	67	9
			67	16
			83	15
61888	01420-00006	5310-01-177-0884	43	4
61888	02000-00004	5310-01-174-2726	33	10
61888	02000-00006	5310-01-117-2409	19	9
61888	02000-00008		57	5
			59	4
			77	23
61888	02000-00012	5310-01-169-8267	59	13
			73	37
61888	02000-00020	5310-01-168-5571	61	3
61888	02000-00024	5310-01-168-3936	57	19
61888	02000-00030	5310-01-177-3830	63	4
61888	02000-10010	5310-01-177-5904	73	26
61888	02010-00005	5310-01-177-3840	41	2
61888	02010-00006	5310-01-138-3289	19	11
			28	3
			43	5
			70	21
			77	26
			85	26
61888	02010-00010	5310-01-173-3641	46	14
			48	11
			55	3
			56	28
			59	6
			61	28

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	02010-00010	5310-01-173-3641	66	4
			66	47
			73	5
			74	5
			74	11
			75	3
			77	18
			78	31
			79	41
			79	52
			80	15
			81	30
			82	31
			84	15
			85	25
			86	18
			86	20
61888	02010-00012	5310-01-169-9632	63	16
			66	6
			71	3
			71	9
			79	6
			80	19
			82	21
			82	37
61888	02010-00016	5310-01-177-0901	71	17
			79	58
			82	26
			82	41
			86	6
61888	02010-00020	5310-01-177-5914	71	14
61888	02010-00030	5310-01-177-5912	72	3
61888	02011-00008	5310-01-172-0957	47	8
			48	15
			48	34
			55	35
61888	02011-00010	5310-01-168-3942	45	9
			46	5
61888	02011-00012	5310-01-171-8126	48	50
			73	38
			79	48
61888	02011-00014	5310-01-177-5915	78	23
61888	02011-00016	5310-01-177-0902	79	11
61888	02011-00020	5310-01-177-3400	79	18
61888	02100-00020	5365-01-172-9473	61	2
61888	02100-00025	5365-01-179-5983	79	3
			82	13
			82	28
61888	02100-00035	5365-01-169-5705	52	11
61888	02100-00040	5365-01-177-0091	79	23
			81	3

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	02100-00045	5365-01-180-5365	79	8
			82	35
61888	02110-00018	5365-01-177-3429	85	5
61888	02110-00032		75	16
61888	02110-00042	5365-01-177-4014	69	18
61888	02110-00048	5365-01-169-5706	66	15
61888	02110-00085	5365-01-177-3428	82	18
61888	02110-00090	5365-01-178-2196	79	24
61888	02110-00100	5365-01-178-2197	79	26
61888	02200-02015		61	15
61888	02200-03040		81	18
61888	02200-04030	5315-01-177-8511	83	16
61888	02200-04036		80	33
61888	02200-04040	5315-01-177-8510	69	2
61888	02200-06055	5315-01-184-5787	63	2
61888	02200-16010	5315-01-184-5786	19	10
			77	13
61888	02200-16015		57	12
61888	02200-32032	5315-01-171-4015	67	10
			67	15
61888	02212-06030	5315-01-171-8835	55	28
61888	02212-12020	5315-01-169-9454	46	20
61888	02262-06015	5315-01-179-4529	19	7
61888	02262-06020	5315-01-179-4528	19	25
61888	02262-08020	5315-01-169-5672	57	13
			59	7
61888	02262-08030	5315-01-170-6442	61	17
61888	02262-10025	5315-01-177-9852	73	30
61888	02270-04032		82	5
61888	02270-06030	5315-01-169-3199	45	1
61888	02270-06032	5315-01-169-3200	48	43
61888	02270-06040	5315-01-177-8512	82	19
61888	02360-05019	5315-01-173-0396	48	19
61888	02432-01008	5320-01-179-1192	73	2
61888	03000-06213	3110-01-224-1359	55	16
61888	03040-06013	3110-01-194-5977	79	27
61888	03042-06308	3110-01-194-5976	79	25
61888	03071-30206	3110-01-136-5383	63	5
61888	03071-30211	3110-01-179-4452	63	7
61888	03071-30214	3110-01-169-4440	54	8
61888	03126-83201		56	32
61888	03146-13201		56	3
			56	17
61888	0319000013	4820-01-168-9566	49	4
61888	03192-00012	5310-01-169-2914	54	14
61888	03192-10007	5310-01-169-0705	55	50
61888	03192-10012	5310-01-168-3934	54	13
61888	03217-08501	5330-01-177-3845	63	8
61888	03300-00110		46	3
61888	03300-00120	5330-01-178-3715	48	38
			70	5

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	03300-00160		48	17
61888	03300-00180	5330-01-177-3850	70	13
61888	03300-00390	5330-01-178-3717	83	13
61888	03300-00500		69	12
61888	03300-00650	5330-01-178-3716	82	17
61888	03300-00700		80	23
61888	03300-10220		52	10
61888	03310-00300	5330-01-178-3358	52	12
			84	11
61888	03310-00350	5330-01-178-3357	84	12
61888	03310-00450		48	36
61888	03310-00550		69	14
61888	03310-00650		46	21
61888	03310-00700		55	5
61888	03310-00750		55	44
61888	03320-00110	5330-01-177-3849	68	8
			68	10
			84	36
			84	37
			87	3
61888	03320-00140	5330-01-177-5916	68	2
			68	16
			68	21
61888	03320-00180	5330-01-178-2092	80	8
			84	24
			84	25
61888	03320-00240	5330-01-177-3851	70	17
61888	03320-00250		80	26
61888	03320-00280	5330-01-178-6026	85	3
			85	34
61888	03350-00250	5330-01-178-3718	83	10
61888	03350-00400	5330-01-178-6025	83	8
61888	03350-00600		80	24
61888	03350-00650		78	22
61888	04000-00100	4730-01-169-7643	48	7
61888	04000-00200	4730-01-178-8837	70	15
			84	30
61888	04134-00202	4730-00-173-1884	68	9
61888	04134-00303		68	17
61888	04134-00404	4730-01-019-9815	84	20
			85	20
			85	31
61888	04150-00202	4730-01-179-5410	68	7
			84	35
			84	38
61888	04150-00404	4730-01-179-5411	85	21
			85	32
61888	04461-03055	4720-01-178-0655	68	18
61888	04471-03060	4720-01-176-1066	87	5
61888	04471-03070	4720-01-176-1065	87	1
61888	04601-33160	4720-01-176-4051	86	29

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	04700-12050	4720-01-178-7014	84	5
61888	04700-12105	4720-01-176-4056	84	21
61888	04710-04021	4720-01-178-7013	68	6
61888	04710-04090	4720-01-178-0656	68	5
61888	04720-10140	4720-01-181-0111	71	26
61888	04720-12006	4720-01-178-7012	19	4
			43	3
61888	04720-13079	4720-01-178-8470	85	17
61888	04720-13910	4720-01-181-0112	84	1
			85	38
61888	04901-00100		56	5
		4730-00-050-4208	78	12
			82	1
61888	04901-00160	4730-01-192-8163	79	55
			82	15
61888	04901-00190	4730-01-167-2824	56	14
			56	26
			78	33
61888	04901-00191	4730-01-167-2824	46	18
			56	12
			56	15
61888	04911-00018	4730-01-178-2915	84	2
			85	13
61888	04911-00023	4730-01-177-3782	68	4
61888	04911-00042	4730-01-178-2916	84	22
61888	04911-00044	4730-01-167-4402	23	14
			84	26
61888	04911-00048	4730-01-178-2914	84	4
61888	04921-02005	4730-01-177-3774	80	4
61888	09210-10200	9905-01-175-5629	73	34
73842	10F64	2640-00-472-8645	64	3
			65	3
61888	10070-00019	5340-01-169-3026	45	4
61888	10113-50141		55	30
08108	1157	6240-00-889-1799	39	4
61888	12003-22041	5365-01-173-3752	55	11
61888	12003-22051	3110-01-171-1096	55	4
61888	12003-43011	3110-01-170-8565	55	9
61888	12003-43021	3110-01-171-5322	55	45
61888	12003-43031	3110-01-168-9079	55	41
61888	1204-11	4720-01-172-0593	59	11
61888	12163-42201	3040-01-169-7706	48	21
61888	12163-42211	3020-01-169-7393	48	22
61888	12163-42231	3020-01-170-4747	48	25
61888	12163-80221	2520-01-170-2523	53	1
61888	12163-80231	2520-01-169-2842	51	1
61888	12163-80241	4820-01-168-9583	49	1
61888	12163-80251	2520-01-170-5421	50	1
61888	12163-80281	3040-01-167-7089	48	18
61888	12163-80301	2520-01-167-7977	46	23
61888	12163-82001	2520-01-167-7128	46	16

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	12163-82022		46	2
61888	12163-82071	2520-01-169-7336	46	22
61888	12163-82111	5330-01-171-8041	48	35
61888	12163-82121	5330-01-169-6408	55	43
61888	12163-82131		55	42
61888	12163-82141	5310-01-169-4430	55	49
61888	12163-82151	3110-01-169-5711	55	36
61888	12163-82191		55	40
61888	12163-82221	4710-01-169-7354	48	41
61888	12163-82232	5340-01-171-7935	48	44
61888	12163-82241	4820-01-168-3462	48	12
61888	12163-82251	3040-01-167-7202	48	42
61888	12163-82281	2920-01-169-7378	48	45
61888	12163-82291	5305-01-171-3980	48	8
61888	12163-82301	4330-01-169-4968	52	6
61888	12163-82311	4730-01-170-4663	52	5
61888	12163-82321	2520-01-169-8694	48	5
61888	12163-82331	5360-01-170-6585	48	4
61888	12163-82341	5340-01-170-6613	48	2
61888	12163-82361		48	46
61888	12163-82371	4710-01-170-4012	52	16
61888	12163-82391		52	3
61888	12163-82421		48	3
61888	12163-82431	5340-01-170-6616	48	48
61888	12163-82441	4730-01-170-9791	52	4
61888	12163-82501		55	46
61888	12163-82511		55	47
61888	12163-82521		55	48
61888	12163-82531	4730-01-169-1915	52	13
61888	12163-82541	5365-01-171-1261	46	19
			48	39
61888	12163-82561	5330-01-168-3945	46	8
			48	9
61888	12163-82571	5365-01-169-8368	55	37
61888	12163-82581	5365-01-168-5736	55	38
61888	12163-82591	5365-01-168-5741	55	39
61888	12163-82611	4730-01-170-4676	52	15
61888	12163-82621	5306-01-169-0677	47	6
61888	12163-82631	5310-01-168-3935	47	5
61888	12163-89801	2520-01-168-2043	KITS	
61888	12163-89821	4320-01-168-9535	KITS	
61888	12163-89831	2520-01-168-3655	KITS	
61888	12163-89851	2520-01-170-5372	KITS	
61888	1216380301	2520-01-169-1934	47	4
19207	12296626	7690-01-114-3702	15	16
15526	125ST-M10	5310-01-122-3214	20	8
			56	29
			61	13
			66	3
			73	4
			73	15

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
15526	125ST-M10	5310-01-122-3214	74	10
			80	14
			84	17
49234	1272D	2910-00-587-5526	16	7
61888	13063-82021	3040-01-167-9258	47	1
61888	13657-19801	4320-01-186-9461	KITS	
19728	14G5		31	9
61888	14354-10201	2530-01-168-3745	66	8
61888	14354-10301		66	9
61888	14354-10401		66	10
61888	14354-10501	2530-01-170-3966	66	16
61888	14354-10601	2530-01-170-7114	66	23
61888	14354-10701		66	26
61888	14354-10801	2530-01-168-3647	66	29
61888	14354-10902	3040-01-169-7709	66	34
61888	14354-12001	3110-01-168-9080	66	13
61888	14354-12021		66	14
61888	14354-12031		66	33
61888	14354-12041		66	32
61888	14354-12051	5365-01-169-5641	66	27
61888	14354-12061		66	31
61888	14354-12071	5325-01-168-8974	66	28
61888	14354-12091	3120-01-169-8298	66	30
61888	14354-12101	3040-01-169-1974	66	38
61888	14354-12111	2530-01-168-3648	66	36
61888	14354-12121	5360-01-168-5491	66	37
61888	14354-12131	5360-01-168-5492	66	39
61888	14354-12141	5365-01-168-5604	66	42
61888	14354-12151	5365-01-168-5605	66	44
61888	14354-12161		66	43
61888	14354-12171	5310-01-168-5426	66	45
61888	14354-12181	5340-01-168-3510	66	46
61888	14354-12191	5365-01-168-5606	66	59
61888	14354-12201		66	41
61888	14354-12211	5305-01-168-5543	66	51
61888	14354-12221	5365-01-168-9990	66	50
61888	14354-12231	3040-01-169-7349	66	49
61888	14354-12241		66	52
61888	14354-12251	5330-01-168-5508	66	54
61888	14354-12261	5310-01-168-5427	66	56
61888	14354-12271	5310-01-168-5572	66	57
61888	14354-12291	2530-01-169-7324	KITS	
61888	14437-10201	4320-01-178-8836	75	1
61888	14442-50002	2520-01-183-2219	48	1
61888	14453-22011	3040-01-169-7383	55	10
61888	14453-22021		55	13
61888	14453-22031		48	30
61888	14453-52002	3020-01-170-5404	55	23
61888	14453-52011	3020-01-169-9771	55	33
61888	14453-52022		55	19
61888	14453-52032		55	18

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	14453-52041	5306-01-172-2547	55	15
61888	14453-52051	5305-01-170-6190	55	32
61888	14453-52061	5340-01-170-8562	55	31
61888	14453-52071	5365-01-168-4112	55	21
61888	14453-52081	5365-01-168-4113	55	20
61888	14453-52091		55	26
61888	14453-52101		55	27
61888	14453-52111		48	31
61888	14453-59801	2520-01-169-1916	55	17
61888	14463-42001		55	14
61888	14463-42601	3020-01-172-0667	55	12
61888	14463-80262	2520-01-170-0826	48	28
61888	14463-82012		48	29
61888	15413-22021	5306-01-170-4552	48	32
61888	15413-22081		55	8
61888	15413-22091		55	7
61888	15413-22101		55	6
19710	1595893	5306-00-206-6003	46	7
61888	16113-52112	3020-01-170-2556	55	25
61888	16113-52121		55	24
61888	16113-52141	5365-01-168-4111	55	22
61888	20155-30061	5360-01-170-6598	61	32
61888	20224-30061		56	22
61888	20224-40014	2530-01-176-8539	63	6
61888	20229-10993	9905-01-174-0975	71	7
61888	20314-30161		56	4
61888	20315-30021	2540-01-168-2154	61	22
61888	20317-60331	5340-01-175-4276	68	12
			84	44
61888	20423-50283	5305-01-171-8095	58	6
61888	20712-40273	2590-01-173-4713	42	1
61888	20801-02061	2910-01-178-7135	14	3
61888	20801-07231	3120-01-178-1882	4	12
61888	20801-07711	3120-01-178-1884	6	7
61888	20801-07731	3120-01-178-1885	6	7
61888	20801-08341	5365-01-175-0589	2	3
61888	20801-09911	2910-01-182-6849	KITS	
61888	22018-30064	5340-01-174-8438	71	18
			79	57
61888	22114-10031	5325-01-170-8581	66	1
61888	22117-40032	5355-01-186-9035	77	10
61888	22191-02011	5310-01-177-5903	71	21
61888	22192-12111	4820-01-169-1922	21	8
61888	22192-12121	5330-01-169-0666	21	9
61888	22192-22091	4730-01-177-4727	71	27
61888	22192-42171	2920-01-174-9402	36	2
61888	22193-03001	4730-01-168-6414	54	4
61888	22193-03011		84	8
61888	22194-32361	2530-01-174-9519	63	1
61888	22195-52001	5340-01-169-6785	57	8
61888	22197-39802	4820-01-189-6607	KITS	

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	22197-52081	5365-01-181-5095	16	8
			88	10
61888	22197-52091	5330-01-178-3719	16	9
			88	9
61898	22198-12051		82	4
61888	22198-52101		69	17
61888	22199-12401	4730-01-174-9447	82	14
61888	22212-10031	5365-01-169-8366	21	1
61888	22214-30321		56	6
			56	30
61888	22216-10262	3040-01-174-9341	71	13
61888	22216-30051		72	4
61888	22218-40191	5310-01-175-3707	79	33
			81	20
61888	22252-21011	5330-01-177-8445	88	13
61888	22252-32241	5365-01-168-3196	20	9
			79	38
61888	22252-32251	5310-01-168-3075	20	11
			74	6
			79	37
61888	22252-42121	5325-01-174-8812	73	23
61888	22253-02061	5340-01-169-6828	54	3
61888	22298-40111	5305-01-174-8217	80	2
			81	12
61888	22304-40302	2530-01-177-2493	63	12
61888	22431-02001	3120-01-176-1018	1	7
61888	22438-43001	3020-01-180-7264	79	30
			81	23
61888	22438-45511	3020-01-182-5687	81	22
61888	22438-45651	3020-01-181-6691	79	29
61888	22439-44031	2530-01-178-8915	62	4
61888	22512-20152	4730-01-178-2949	16	10
61888	22517-40051	5365-01-178-3773	77	12
61888	22518-30031A	3120-01-176-1023	79	56
61888	22518-40151	4730-01-178-8838	46	4
			48	13
			48	37
61888	22519-10291		79	44
61888	22548-34021		79	47
61888	22548-34051	5310-01-177-0894	79	4
61888	22548-34061	5310-01-179-4422	79	46
61888	22571-02011	5340-01-175-7798	1	8
61888	22578-22401	3110-01-177-0942	79	43
			82	12
			82	29
61888	22578-42021	3120-01-176-1024	80	21
61888	22672-40201	6220-01-182-2554	39	3
61888	22672-42061	6680-01-173-3267	33	7
61888	22672-49311	6220-01-182-5845	39	5
61888	22673-72001	5310-01-169-9620	58	5
61888	22674-3211	5310-01-178-3698	80	32

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	22675-32021	3120-01-170-3845	83	9
61888	22676-32041	5315-01-176-1104	72	2
61888	22678-32001	5340-01-176-7466	79	15
61888	22678-52021	5365-01-174-0591	78	4
61888	22678-52101		78	17
61888	22679-12032	2540-01-173-1368	74	7
61888	22679-43231	5365-01-175-0682	79	16
61888	22679-43761	3120-01-175-0593	82	25
61888	22679-43831	5365-01-174-8449	82	24
61888	22717-40061	5315-01-176-1105	77	15
61888	22859-12031		73	28
61888	23031-00201	2940-01-175-6491	15	5
61888	23032-12001	4720-01-167-7233	23	15
61888	23032-12011	4720-01-167-7232	23	13
61888	23032-22011	4720-01-177-8393	16	11
61888	23032-33001	2990-01-168-3674	20	1
61888	23032-42001	6140-01-171-9451	43	7
61888	23035-20201	3040-01-186-5751	19	13
61888	23035-22001		19	15
61888	23035-22011	2590-01-178-8907	19	3
61888	23035-22031		19	8
61888	23037-12001	5307-01-179-2374	84	9
61888	23041-00101	2805-01-175-1409	1	15
61888	23047-82001	4720-01-169-1949	52	9
61888	23047-82011	4720-01-169-7633	52	8
61888	23079-32001	6210-01-172-3131	71	6
61888	23232-42072	5930-01-193-5257	38	4
61888	23235-40091	5360-01-171-7984	61	27
61888	23302-42301	6210-01-172-8352	33	3
61888	23307-62281	4730-01-175-1105	86	15
61888	23329-12051		71	28
61888	23442-20131	4820-01-178-6477	16	15
61888	23451-02031	5365-01-179-9713	1	6
61888	23452-22041	4730-01-177-8506	16	14
61888	23452-30301	5340-01-172-2691	20	2
61888	23452-32021		20	4
61888	23452-32031	4730-01-167-7960	20	13
61888	23452-42181	5310-01-174-8244	43	6
61888	23452-43291	5306-01-178-2051	44	3
61888	23453-02071	3110-01-169-2117	54	10
61888	23453-02091	5365-01-168-5739	54	12
61888	23453-02131	5330-01-168-5640	54	11
61888	23455-52001	5340-01-170-3216	57	6
61888	23456-42181	5340-01-178-2206	73	32
61888	23457-42041	3040-01-177-8562	77	25
61888	23457-42101	3120-01-178-2130	77	3
			77	6
			77	9
61888	23457-52221	2940-01-174-2311	84	3
61888	23457-60311	4730-01-175-1104	84	33
			84	34

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	23458-22111	3110-01-177-0941	79	9
			82	34
61888	23458-32051	3110-01-181-2566	79	5
61888	23458-52001	5315-01-176-8204	78	29
61888	23458-52031	5310-01-174-8245	56	13
61888	23460-72231	3120-01-181-0786	82	9
61888	23460-92301	4720-01-192-8096	84	47
61888	23467-82041	5330-01-170-4610	52	2
61888	23468-52101	3120-01-176-1022	78	9
61888	23642-20042	5330-01-175-6976	41	4
61888	23648-50161		78	30
			79	51
61888	23650-73581	3020-01-175-3202	79	20
61888	23650-73611	3020-01-181-0326	79	22
61888	23650-82501	3040-01-176-4279	81	5
61888	23650-92061	4720-01-176-6327	85	22
61888	23650-92071	4730-01-175-1102	85	15
61888	23651-02001	5310-01-174-8243	1	9
61888	23651-02011	5310-01-168-1775	1	4
			20	10
			79	40
61888	23652-12051	5310-01-168-1776	21	3
61888	23652-12111	2930-01-169-1957	21	7
61888	23652-12121	4720-01-169-3706	21	6
61888	23652-12131	2930-01-168-3622	22	1
61888	23652-22071	5340-01-185-2168	16	3
61888	23652-22111	4720-01-179-2935	16	5
61888	23652-22121	4730-01-185-9489	16	6
61888	23652-23011	6680-01-173-3277	41	3
61888	23652-23051	4730-01-185-9488	16	12
61888	23652-30201	2990-01-168-3725	20	12
61888	23652-42041	5306-01-175-6930	43	8
61888	23652-42081	5325-01-176-1049	71	24
61888	23652-42221	5930-01-174-1175	38	5
61888	23652-42341	5920-01-216-6121	38	1
61888	23652-42351	6620-01-172-5497	33	6
61888	23652-42371		19	5
			43	2
61888	23652-43001		43	10
61888	23652-43031	6140-01-174-9403	44	1
61888	23652-43041	6140-01-171-9495	44	2
61888	23653-02001	5330-01-168-5641	54	7
61888	23654-13001		66	2
61888	23654-32041		63	9
61888	23654-32081		56	1
			56	16
61888	23654-32161		56	18
61888	23654-34051		63	10
61888	23654-39821	5306-01-178-1515	KITS	
61888	23654-49811	5340-01-178-2045	KITS	
61888	23654-52101		69	4

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	23654-52121		69	13
61888	23654-52131	3930-01-188-3270	69	15
61888	23654-52141		69	16
61888	23654-52151	2530-01-178-6631	69	5
61888	23654-52161	5310-01-179-1285	69	7
61888	23654-52181	5310-01-179-1121	69	3
61888	23654-52201	4320-01-173-4644	KITS	
61888	23654-52211		69	11
61888	23654-52221		69	10
61888	23654-52231	5310-01-177-8083	69	9
61888	23654-52251		69	1
		3040-01-178-7132	69	8
61888	23655-22101	3120-01-184-5847	19	14
61888	23655-22151	5360-01-200-1234	19	6
61888	23655-22201	2540-01-179-3117	19	24
61888	23655-32211	5360-01-168-5726	57	14
61888	23655-42271	4720-01-168-7613	59	2
61888	23655-42421	3120-01-170-3845	61	21
			61	25
61888	23655-42431	5340-01-169-5465	61	33
61888	23655-50101A	2590-01-168-7620	57	9
61888	23655-50301	3040-01-169-7710	57	1
61888	23655-52031		57	18
61888	23655-52051	5340-01-170-0761	57	15
61888	23656-12621	3120-01-176-1021	71	12
61888	23656-40401	5340-01-181-3561	73	11
61888	23656-42331	5305-01-207-9337	33	15
			73	13
61888	23656-42351	5306-01-178-2052	73	42
61888	23656-42491		73	29
61888	23656-42601	5310-01-175-3717	73	41
61888	23656-50201	2510-01-176-9557	74	8
61888	23657-32301	4820-01-188-3271	76	1
61888	23657-40202	3040-01-205-8807	77	1
61888	23657-40212	3040-01-186-5752	77	4
61888	23657-40222		77	7
61888	23657-42002		77	2
61888	23657-42022		77	5
61888	23657-42042		77	8
61888	23657-42081	3040-01-204-1278	77	16
61888	23657-42131	5365-01-175-7011	77	11
61888	23657-53002	4710-01-179-6594	88	2
61888	23657-53051	2590-01-187-2066	88	5
61888	23657-53101		88	6
61888	23657-60211	4720-01-177-0975	84	48
61888	23657-60291	4730-01-181-0097	84	32
61888	23657-60311	4730-01-176-2307	68	20
61888	23657-62001	4730-01-177-0972	84	13
61888	23657-62121	4710-01-176-2996	84	41
61888	23657-62481	4720-01-176-2810	68	19
61888	23657-62491	4720-01-177-0974	68	15

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	23657-62501		68	22
61888	23658-02001	5315-01-176-4071	79	54
61888	23658-22041		82	10
61888	23658-33001	3110-01-176-5926	79	28
61888	23658-40403	4820-01-176-2768	85	1
61888	23658-42031		61	5
61888	23658-50341	5330-01-176-9863	KITS	
61888	23658-50351	5340-01-176-8159	78	8
61888	23658-52031		78	18
61888	23658-52051		78	20
61888	23658-52061		78	19
61888	23658-52071		78	10
61888	23658-52101	5310-01-175-9291	78	13
61888	23658-52141		78	21
61888	23658-52401	5340-01-176-7469	78	14
61888	23658-59801	5330-01-176-9862	KITS	
61888	23659-12101		73	24
61888	23659-44581	5305-01-181-7926	80	7
			81	29
61888	23659-44601	4730-01-177-0971	85	30
61888	23659-44681	4730-01-176-2858	85	35
61888	23659-44842		81	4
61888	23659-45301	4730-01-177-2503	85	6
61888	23659-45311		85	4
61888	23663-90252		45	20
61888	23663-92091	5340-01-168-5600	45	15
61888	23663-92111	3120-01-167-9436	45	7
61888	23665-43111	3120-01-171-8148	61	6
61888	23685-40201	2540-01-169-4943	61	19
61888	23685-40211		61	20
61888	23685-40251	2540-01-174-6227	61	23
61888	23685-40261		61	24
61888	23685-40301		61	4
61888	23685-42061	5340-01-174-3425	61	29
61888	23745-42031	5340-01-172-6438	61	9
61888	23745-42042	5340-01-172-6380	61	11
61888	23745-42052	5340-01-176-7364	61	7
61888	23745-42101	4030-01-171-7956	59	14
61888	23745-42901	5315-01-175-0663	61	12
61888	23775-42101	2530-01-169-4942	59	1
61888	23818-30071	5365-01-175-7012	79	2
61888	23870-52871	5365-01-169-6531	48	6
			52	14
			81	10
61888	23910-22111	3120-01-176-9803	81	13
61888	23913-02041	5310-01-180-2439	62	1
61888	23917-42191	5310-01-175-3720	82	23
61888	23918-52131	5365-01-178-5995	81	17
61888	24230-52701	5360-01-176-7481	81	27
61888	24230-82071	5340-01-189-7776	81	28
61888	24230-92321	4720-01-175-7685	85	18

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61888	24234-30551	2530-01-170-9289	67	5
61888	24234-30561	3040-01-169-7743	67	11
			67	12
61888	24234-32331		67	6
61888	24234-32341		67	7
61888	24234-32351		67	8
			67	14
61888	24234-32391		67	13
61888	24234-32411	5310-01-172-0027	67	19
61888	24234-32421	5310-01-174-6085	67	17
61888	24235-22011		19	21
61888	24235-42091		61	36
61888	24235-52001	5340-01-170-4624	57	11
61888	24239-44221	5340-01-176-9796	85	28
61888	24239-44311	5340-01-176-9795	85	37
61888	24243-90101		45	16
61888	24245-42101		61	18
61888	24352-42031	6645-01-174-0860	33	1
61888	24354-12001	2530-01-167-9270	67	1
61888	24354-12011		67	2
61888	24354-12021		42	6
61888	24354-12031		42	5
61888	24354-12041		42	4
61888	24354-12051		42	3
61888	24354-12061	5340-01-171-8066	67	3
61888	24354-19801	2590-01-183-2349	KITS	
61888	24356-40601	5340-01-181-5102	73	12
61888	24357-42091	3040-01-167-7199	45	18
			57	17
61888	24357-42101	3040-01-167-7200	45	13
61888	24358-12111		82	3
61888	24363-90202		45	2
61888	24363-90211		45	6
61888	24363-92002		45	3
61888	24363-92021		45	8
61888	24442-10201	2930-01-173-1353	21	5
61888	24442-12001	2930-01-170-9281	21	12
61888	24450-70401	3930-01-177-1015	79	17
61888	24450-73431	5340-01-177-3960	79	13
61888	24450-73441		79	10
61888	24450-82221	4810-01-176-4280	81	9
61888	24450-82231		81	6
61888	24450-82241		81	8
61888	24450-82251		81	7
61888	24450-82281		81	15
61888	24450-82291		81	14
61888	24450-82401	5306-01-178-7397	81	25
61888	24450-89801	5330-01-176-9865	KITS	
61888	24450-92101	4720-01-176-8473	85	29
61888	24450-92121	4720-01-177-3501	85	33
61888	24452-52001	5330-01-170-1363	48	53

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	24453-02021	2520-01-167-7209	54	17
61888	24453-02031	2530-01-171-2208	54	9
61888	24453-02061	5305-01-172-6455	54	16
61888	24453-02101	5330-01-168-9246	54	18
61888	24453-02113	2520-01-169-2712	54	2
61888	24453-02121	5330-01-168-5649	54	6
61888	24453-02131	2530-01-179-6532	54	5
61888	24453-70204-1202-02	2530-01-192-6074	58	1
61888	24453-70214-1202-01		58	1
61888	24453-72061	5306-01-170-4555	58	7
61888	24454-22011	2530-01-168-2152	67	23
61888	24454-22021	3040-01-169-7416	67	25
61888	24454-30411	2530-01-176-9579	56	8
61888	24454-30511	2530-01-176-2853	56	7
61888	24454-32091	3040-01-175-1156	56	9
61888	24454-32101	2530-01-176-2923	56	10
61888	24454-32161	5315-01-176-7447	56	21
61888	24454-32171	5340-01-176-7867	56	31
61888	24454-32201	2530-01-178-6658	56	11
61888	24454-32231	2530-01-176-9624	56	25
61888	24454-32251	5340-01-169-5421	67	18
61888	24454-32391		56	2
61888	24454-39802	2530-01-176-9532	KITS	
61888	24454-39811	2530-01-183-2388	KITS	
61888	24454-40211		62	2
61888	24454-40221	2530-01-177-4888	62	3
61888	24454-52011	5340-01-176-0823	67	21
61888	24455-42021	4710-01-169-5405	59	15
61888	24455-42041	4710-01-169-4992	59	12
61888	24455-42061	5340-01-172-2800	59	16
61888	24456-40201	5340-01-178-7453	73	40
61888	24457-60211	4730-01-179-2913	84	31
61888	24457-60301	4820-01-176-6098	70	1
61888	24457-60401	4720-01-177-0976	84	43
61888	24457-62011	4720-01-177-1068	84	27
61888	24457-62021	4720-01-176-8472	84	29
61888	24458-50011	3930-01-179-2605	78	1
61888	24458-50111		78	1
61888	24458-50201		78	6
61888	24458-50211	3040-01-176-6096	78	25
61888	24458-50301	3930-01-209-6039	78	5
61888	24458-50311	5330-01-177-9693	KITS	
61888	24458-50321	3040-01-175-6466	78	2
61888	24458-52041		78	3
61888	24458-52081	5365-01-176-7425	78	16
61888	24458-52421		78	27
61888	24458-52431		78	28
61888	24458-52441		78	26
61888	24458-59811	3040-01-188-3208	KITS	

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	24459-32001		72	1
61888	24459-42261	3040-01-175-6467	80	22
61888	24459-42271		80	17
61888	24459-42291		80	30
61888	24459-42311	4730-01-176-2803	80	9
61888	24459-42381	3040-01-175-6503	79	32
			81	21
61888	24459-42391	5315-01-178-9771	79	31
			81	24
61888	24459-42901		85	11
61888	24459-42911		85	10
61888	24459-42921	4820-01-176-2857	85	7
61888	24459-42951	4820-01-174-2301	85	8
61888	24459-42961	5360-01-176-7482	85	9
61888	24459-42971	4820-01-176-2808	85	2
61888	24459-43401	5330-01-176-3932	80	29
61888	24459-43441	5306-01-195-3255	80	6
61888	24459-49801	5330-01-176-9864	KITS	
61888	24465-42001	4710-01-169-5404	59	8
61888	24465-42021	5340-01-170-8608	59	10
61888	24466-50201	3930-01-175-6450	74	9
61888	24846-80302	2540-01-179-4003	74	1
61888	24847-42061	5340-01-176-7496	77	22
61888	24849-42281	3930-01-176-1198	80	12
61888	25079-10322A	6625-01-175-1699	33	5
61888	25177-61131	4730-01-177-0970	84	28
61888	25303-02102	5307-01-169-0132	54	15
61888	25597-60301	2910-01-177-5392	84	23
61888	27132-40171	5340-01-171-8007	52	7
			85	36
61888	27132-40181	5975-01-084-0977	85	19
61888	27738-22201	3120-01-177-0944	78	7
61888	27738-52061	5330-01-177-8337	83	14
61888	27738-52091	5330-01-176-7920	83	12
61888	27918-92141	2530-01-176-2856	83	7
61888	27918-92151	5330-01-178-1806	83	6
61888	27918-92161		83	5
61888	27918-92171		83	4
61888	27918-99801	5330-01-177-8154	KITS	
61888	27919-12041		67	4
61888	27919-12191		73	9
61888	27919-12201		73	8
61888	27978-32581	5365-01-176-1292	80	13
61888	27978-42411		80	31
61888	27978-42421		80	28
61888	27978-42601	5360-01-176-7480	80	10
61888	27978-52111	5365-01-186-1786	83	3
77910	3A1501	2990-00-838-2590	19	1
72741	435-006	5310-01-138-3289	20	5
24446	4412	6240-00-809-4977	39	2
62983	471060	5310-01-116-1212	77	14

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
62983	471061	5310-01-117-2409	44	4
61080	50002700	5310-01-074-2101	50	15
61888	52252-72071	5330-01-177-3405	16	4
			88	1
61888	52436-80801		63	11
61888	52672-72121		73	36
61888	53031-12111	4720-01-176-3934	15	3
61888	53032-62001		19	18
61888	53110-12421	4730-01-179-2909	87	4
61888	53652-72101	4730-01-180-1816	16	13
61888	53655-02001	3930-01-177-1014	71	1
61888	53655-10201	2510-01-176-2854	71	4
61888	53655-10402	5340-01-179-5967	71	25
61888	53655-10412	2510-01-176-9556	71	11
61888	53655-12291	5306-01-177-0870	71	5
61888	53655-12321	5340-01-184-5904	71	10
61888	53655-12331	5340-01-179-5947	71	22
61888	57246-02251		68	3
61888	57246-04101	4730-01-176-2806	68	1
61888	57915-52322	3040-01-175-6468	80	27
61888	62016-12222	3040-01-175-6395	82	39
61888	62016-12251	3930-01-174-3731	82	42
61888	62016-12521	4810-01-174-2327	83	11
52676	6202-2RSJHE	3110-00-108-9225	5	7
61888	62023-42811	3930-01-179-5542	86	27
61888	62050-12021	5310-01-176-5883	86	3
			86	9
52676	6207J		48	24
61888	62130-12001	4720-01-176-9510	86	16
61888	62130-12011	4720-01-176-4050	86	14
61888	62130-12101	5310-01-176-5884	86	8
61888	62130-14001	5340-01-184-6531	86	30
61888	62130-14031	5306-01-180-4733	86	1
			86	11
61888	62130-14041		86	4
61888	62130-14061	4710-01-176-2859	86	28
61888	62130-14141		86	7
61888	62130-14211	5340-01-176-8208	86	23
61888	62336-13011	5365-01-177-1065	87	6
61888	62516-12261	5315-01-176-1111	82	20
61888	63026-12151	3120-01-180-6687	82	16
61888	63110-12031	4730-01-176-9505	86	12
61888	63110-12351	4730-01-179-6267	87	2
61888	63110-14731	4730-01-178-7169	87	8
61888	63110-14751	4730-01-178-7170	87	7
61888	63110-18281		73	7
61888	63130-12101	4710-01-176-1298	86	22
61888	63130-15301		86	2
			86	10
61888	63130-25175	4820-01-187-1966	76	29
61888	63810-12081	5340-01-177-0100	86	21

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
12603	662634	4730-00-857-0960	80	3
			81	11
61888	78247-28010	4720-01-177-8477	84	19
61888	78247-28201		43	9
61888	78247-28204	6210-01-174-0090	73	18
61888	78247-28320	3040-01-175-6440	81	26
61888	78260-69001	3930-01-176-2855	82	7
61888	78260-69002	3930-01-185-6709	82	8
61888	78260-69003	3930-01-174-5948	82	43
61888	78260-69004	3040-01-176-9604	83	1
61888	78260-69005	3040-01-176-2773	83	17
61888	78260-69006	3040-01-175-5478	83	2
61888	78260-69012	3930-01-174-4175	82	2
61888	78260-69016	4310-01-184-3184	81	16
61888	78260-69018	3040-01-176-4278	80	25
61888	78260-69021		79	45
61888	78260-69022	3930-01-178-3046	79	50
61888	78260-69025	3930-01-175-5222	79	14
61888	78260-69028	5985-01-176-4293	79	1
61888	78260-69032	3930-01-183-2507	81	1
61888	78260-69033	3040-01-176-2772	81	2
61888	78260-69037	3930-01-178-7143	80	1
61888	78260-69038	3930-01-178-8552	80	1
61888	78260-69039	3040-01-178-7141	80	5
61888	78260-69040	3040-01-178-7142	80	5
61888	78260-69218	5340-01-176-8166	82	38
61888	78260-69219	5365-01-176-5770	82	32
61888	78260-69220	2540-01-174-4143	82	11
61888	78260-69225	5365-01-176-1293	82	33
61888	78260-69231	3930-01-175-6396	82	26
61888	78260-69232		82	6
61888	78260-69234		85	23
61888	78260-69236	4720-01-181-0100	85	12
61888	78260-69238	5310-01-176-5831	80	11
61888	78260-69312		33	12
61888	78260-69313	5995-01-176-2930	34	1
61888	78260-69314	2920-01-176-2931	35	1
61888	78260-69315	5995-01-176-2932	36	1
61888	78260-69316		33	11
61888	78260-69317	5995-01-222-8739	37	1
61888	78260-69319	2510-01-183-0019	73	1
61888	78260-69322	3930-01-189-1610	33	14
			71	20
61888	78260-69323	5340-01-186-9120	73	21
61888	78260-69324	5340-01-176-7414	73	22
61888	78260-69327	5310-01-175-9279	73	14
61888	78260-69328	5310-01-175-9278	73	20
61888	78260-69329	5340-01-227-8694	79	39
61888	78260-69331	2510-01-176-6019	71	23
61888	78260-69333		71	19
			88	8

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	78260-69340		73	35
61888	78260-69341	7690-01-174-3676	73	10
61888	78260-69342	9905-01-174-0954	73	33
61888	78260-69344		73	31
61888	78260-69353	2530-01-192-0534	60	1
61888	78260-69690	9905-01-174-0954	73	3
61888	80110-00616	5306-01-178-6218	84	16
61888	80110-00624	5306-01-180-8678	84	7
61888	80430-00006	5310-01-176-4002	84	6
			84	14
16004	82024	5310-01-102-0328	21	2
			61	16
75175	860-2301	6220-00-774-4704	39	1
61888	89140-00006		86	13
13445	956-3125	2920-01-195-7297	33	8
61888	99999-01000		54	1
61888	99999-01001		55	1
61888	99999-01007		58	29
61888	99999-01008		58	31
61888	99999-01009		58	30
61888	99999-01022		26	7
61888	99999-01023		26	4
61888	99999-01024		26	12
61888	99999-01025		26	20
61888	99999-01026		26	18
61888	99999-01027		75	4
61888	99999-01028		75	13
61888	99999-01029		75	9
61888	99999-01030		75	10
61888	99999-01031		75	12
61888	99999-01032		75	11
61888	99999-01033		76	11
61888	99999-01034		76	12
61888	99999-01035		76	6
61888	99999-01036		76	26
61888	99999-01037		76	27
61888	99999-01038		76	28
61888	99999-01039		29	5
61888	99999-01040		29	6
61888	99999-01041		66	11
61888	99999-01042		66	24
61888	99999-01043		70	18
61888	99999-01044		70	10
61888	99999-01045		70	4
61888	99999-01047		63	14
61888	99999-01048		63	13
61888	99999-01049		12	25
61888	99999-01050		12	55
61888	99999-01051		12	83
61888	99999-01052		12	73
61888	99999-01053		12	53

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
61888	99999-01054		12	15
61888	99999-01055		12	49
61888	99999-01056		12	52
61888	99999-01057		12	22
61888	99999-01059		12	4
61888	99999-01060		12	5
61888	99999-01061		12	64
61888	99999-01062		12	63
61888	99999-01063		12	10
61888	99999-01064		12	9
61888	99999-01065		12	51
61888	99999-01066		12	58
61888	99999-01067		12	7
61888	99999-01068		12	79
61888	99999-01069		12	81
61888	99999-01070		12	12
61888	99999-01071		12	26
61888	99999-01072		12	80
61888	99999-01073		12	20
61888	99999-01074		12	28
61888	99999-01075		12	30
61888	99999-01076		12	33
61888	99999-01077		12	35
61888	99999-01078		12	36
61888	99999-01079		12	41
61888	99999-01080		12	43
61888	99999-01081		12	87
61888	99999-01082		12	86
61888	99999-01083		12	89
61888	99999-01084		12	88
61888	99999-01085		12	66
61888	99999-01086		12	19

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
KITS		2520-01-168-2043	61888	12163-89801
KITS		2520-01-168-3655	61888	12163-89831
KITS		2520-01-170-5372	61888	12163-89851
KITS		2530-01-169-7324	61888	14354-12291
KITS		2530-01-176-9532	61888	24454-39802
KITS		2530-01-183-2388	61888	24454-39811
KITS		2590-01-183-2349	61888	24354-19801
KITS		2910-01-178-3007	61888	N-16475-B0100
KITS		2910-01-178-3008	61888	N-16455-A3501
KITS		2910-01-182-6849	61888	20801-09911
KITS		3040-01-188-3208	61888	24458-59811
KITS		4320-01-168-9535	61888	12163-89821
KITS		4320-01-173-4644	61888	23654-52201
KITS		4320-01-186-9461	61888	13657-19801
KITS		4820-01-189-6607	61888	22197-39802
KITS		5306-01-178-1515	61888	23654-39821
KITS		5330-01-175-0461	61888	N-10101-L1125
KITS		5330-01-176-9862	61888	23658-59801
KITS		5330-01-176-9863	61888	23658-50341
KITS		5330-01-176-9864	61888	24459-49801
KITS		5330-01-176-9865	61888	24450-89801
KITS		5330-01-177-8154	61888	27918-99801
KITS		5330-01-177-9693	61888	24458-50311
KITS		5340-01-178-2045	61888	23654-49811
KITS		5340-01-179-9893	61888	N-16465-B0100
1		2805-01-175-1420	61888	N-10103-48220
1	1	5340-01-175-0560	61888	N-10006-32200
1	2	5340-01-175-0579	61888	N-10004-14600
1	3	5306-01-175-0500	61888	N-08121-01662
1	4	5310-01-168-1775	61888	23651-02011
1	5	2910-01-178-6630	61888	N-17078-32200
1	6	5365-01-179-9713	61888	23451-02031
1	7	3120-01-176-1018	61888	22431-02001
1	8	5340-01-175-7798	61888	22571-02011
1	9	5310-01-174-8243	61888	23651-02001
1	10	5306-01-175-3614	61888	01103-10090
1	11	5306-01-175-0427	61888	N-08131-02510
1	12	5310-01-175-0632	61888	N-08915-24010
1	13	5340-01-175-6870	61888	N-11213-K7215
1	14	5340-01-175-6871	61888	N-11214-K7215
1	15	2805-01-175-1409	61888	23041-00101
2	1	2805-01-183-2481	61888	N-11010-K7201
2	2	5340-01-174-8365	61888	N-01648-00084
2	3	5365-01-175-0589	61888	20801-08341
2	4	3120-01-183-5713	61888	N-15042-20100
2	5	5306-01-175-6786	61888	N-12293-P0500
2	6	5315-01-174-2549	61888	N-11024-KO100
2	7	5365-01-175-0588	61888	N-11019-32200
2	8	5315-01-175-6714	61888	N-30412-P5100
2	9	5315-01-174-2550	61888	N-11024-78200
2	10	5305-01-175-0486	61888	N-13081-78200

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
2	11	5315-01-175-3914	61888	N-11023-32200
2	12	5365-01-175-0447	61888	N-08931-30410
2	13	5307-01-174-2735	61888	N-21077-Y4400
2	14	5307-01-174-2736	61888	N-08213-85010
2	15	5365-01-175-0446	61888	N-08931-30210
2	16	5315-01-175-3915	61888	N-11023-78200
2	17	5307-01-174-2734	61888	N-08227-03010
2	18	5315-01-174-2551	61888	N-30413-61700
2	19		61888	N-12289-14600
2	20		61888	N-12279-32200
3	1	2805-01-175-1289	61888	N-11042-B8655
3	2		61888	N-11063-Y4400
3	3	5315-01-174-2552	61888	N-11065-24000
3	4	5340-01-174-8365	61888	N-01648-00084
3	5	5307-01-174-2737	61888	N-08223-83210
3	6	4730-01-170-7071	61888	N-08931-30610
3	7	5340-01-175-0442	61888	N-11099-P0502
3	8	5306-01-178-1829	61888	N-11056-78200
3	9	5306-01-178-1830	61888	N-11057-78200
3	10	4730-01-170-7071	61888	N-08931-30610
3	11	5330-01-175-0463	61888	N-11044-P5101
4	1	5306-01-180-6520	61888	N-08120-62062
4	2		61888	N-12303-L1101
4	3	5315-01-178-1671	61888	N-13022-48200
4	4	5365-01-177-0946	61888	N-12307-48201
4	5	3020-01-177-3982	61888	N-12351-L1100
4	6	2805-01-176-9569	61888	N-12302-32200
4	7	3020-01-178-2906	61888	N-13021-73601
4	8	5365-01-178-2032	61888	N-12299-32200
4	9	5315-01-178-1670	61888	N-00926-51600
4	10	2805-01-176-9582	61888	N-12200-78200
4	11	5365-01-177-0945	61888	N-32202-30000
4	12	3120-01-177-8311	61888	N-12210-E0702
4	12	3120-01-178-1881	61888	N-12207-E0702
4	12	3120-01-178-1882	61888	20801-07231
4	13	5310-01-178-1922	61888	N-12308-L1101
4	14	5306-01-178-1632	61888	N-12309-78200
5	1	2805-01-176-9588	61888	N-30401-L1001
5	2		61888	N-08915-24010
5	3	5306-01-178-1633	61888	N-08131-02810
5	4	5306-01-178-1634	61888	N-12315-78200
5	5	2805-01-176-9583	61888	N-12310-K7215
5	6	3020-01-177-2442	61888	N-12312-L1101
5	7	3110-00-108-9225	52676	6202-2RSJHE
6	1	2805-01-178-3646	61888	N-12010-R9001
6	1	2805-01-204-1281	61888	N-12010-R9004
6	2	2805-01-176-9518	61888	N-12036-R9000
6	2	2805-01-185-1158	61888	N-12033-R9000
6	3	2805-01-177-8611	61888	N-12100-P5100
6	4	5310-01-178-1660	61888	N-12113-78201
6	5	5306-01-178-1635	61888	N-12109-E0701

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
6	6	3120-01-178-1883	61888	N-12030-32200
6	7	3120-01-178-1884	61888	20801-07711
6	7	3120-01-178-1885	61888	20801-07731
6	7	3120-01-178-1886	61888	N-12118-P5112
6	8	5365-01-177-1042	61888	N-12032 25501
7	1	2805-01-178-7153	61888	N-13238-12200
7	2	2805-01-177-8612	61888	N-13231-78201
7	3	2805-01-176-9581	61888	N-13001-78201
7	4	5315-01-178-1672	61888	N-00926-41600
7	5	5365-01-178-2035	61888	N-13010-78201
7	6	5306-01-177-8292	61888	N-08120-61662
7	7	3020-01-181-3392	61888	N-13028-73600
7	8	3020-01-177-5442	61888	N-13024-78201
7	9	5330-01-175-0465	61888	N-13079-32200
7	10	2805-01-177-8561	61888	N-13070-32200
7	11	5306-01-167-2311	61888	N-08120-63562
7	12	5310-01-177-8322	61888	N-13013-78200
7	13	5310-01-168-5577	61888	N-08915-14010
7	14	5306-01-177-8080	61888	N-13012-78200
7	15		61888	N-13520-L1100
7	16	5310-00-959-4679	96906	M535340-45
7	17	5306-01-177-8081	61888	N-08110-85510
7	18	5310-01-178-1661	61888	Z-9-0911-0508-0
7	19	5306-01-177-8293	61888	N-08110-82062
7	20	5306-01-167-2310	61888	N-08110-83062
7	21	2805-01-176-9589	61888	N-13033-L1103
7	22	5315-01-175-3914	61888	N-11023-32200
7	23	5307-01-182-7580	61888	N-08216-61410
7	24		61888	N-13521-L1100
7	25	2805-01-185-9529	61888	N-13501-L1103
7	26	5306-01-167-2311	61888	N-08120-63562
7	27	5306-01-177-8294	61888	N-08120-62562
7	28		61888	N-13042-L1401
8	1	5310-01-178-1639	61888	N-13274-81101
8	2	5310-01-178-1923	61888	N-13275-E0702
8	3	2805-01-187-1308	61888	N-13264-L1100
8	4	5330-01-175-0464	61888	N-13270-E3400
8	5	2805-01-178-4897	61888	N-13259-78201
8	6	2805-01-203-1294	61888	N-13210-B8501
8	7	5340-01-178-7161	61888	N-13209-08000
8	8	5360-01-178-1738	61888	N-13203-T7200
8	9		61888	N-13207-66712
8	10	2805-01-182-9216	61888	N-13201-P0500
8	11	2805-01-178-7019	61888	N-13202-P5100
8	12	5340-01-178-6628	61888	N-13222-78200
8	13	5360-01-178-1739	61888	N-13256-58000
8	14	5315-01-178-1686	61888	N-00921-22510
8	15	5310-01-177-8324	61888	N-13289-58000
8	16	5310-01-176-7741	61888	N-13255-58000
8	17		61888	N-13252-32200
8	18	4730-01-177-4513	61888	N-13254-58000

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
8	19		61888	N-13223-78200
8	20	2805-01-203-2433	61888	N-13258-78201
8	21	5310-01-177-8323	61888	N-08915-44010
8	22	5306-01-177-8279	61888	N-13224-78200
8	23	5305-01-177-8296	61888	N-13226-78200
8	24	5310-01-178-1662	61888	N-13235-78200
8	25	2805-01-176-8691	61888	N-13234-78200
9	1	4720-01-177-4537	61888	N-11826-L1100
9	2	4730-01-186-5624	61888	N-16572-10801
9	3	2990-01-178-6629	61888	N-15262-L1100
9	4	5310-01-178-1964	61888	N-11035-30000
9	5	5306-01-178-7387	61888	N-08190-80410
9	6	4720-01-182-2347	61888	N-11828-L11000
9	7	3040-01-176-9585	61888	N-15040-61000
9	8	5330-01-175-0466	61888	N-15066-78200
9	9	4730-01-175-2540	61888	N-11065-30000
9	10	5306-01-178-2057	61888	N-08120-82200
9	11	5310-00-959-4679	96906	MS35340-45
9	12	4820-01-178-0650	61888	N-11810-A3501
9	13	4730-01-177-3754	61888	N-14008-L1400
9	14	2805-01-186-5642	61888	N-11110-35202
9	15	5310-01-177-8325	61888	N-11026-61000
9	16	5365-01-176-7870	61888	N-11128-69200
9	17	5306-01-177-7944	61888	N-08110-62562
9	18	5306-01-177-7945	61888	N-08110-61262
9	19	5310-01-177-8351	61888	N-08915-13610
9	20	5310-01-178-1663	61888	N-08911-20610
9	21	5306-01-177-9708	61888	N-08110-61462
9	22		61888	N-11121-E0700
9	23	5330-01-175-0462	61888	N-15239-E0700
9	24	2940-01-178-8944	61888	N-15238-78200
9	25	2940-01-150-9445	70040	PF34
9	26	5310-01-178-1664	61888	N-08911-24010
9	27	5310-01-168-5577	61888	N-08915-14010
9	28		61888	N-08915-44010
9	29	4710-01-203-0152	61888	N-15146-12201
9	30	6680-01-176-0414	61888	N-15140-74002
9	31	2590-01-178-7017	61888	N-15255-85030
9	32		61888	N-15270-83400
10	1	2805-01-178-0711	61888	N-15010-76000
10	2		61888	N-15020-78205
10	3	5306-01-178-2056	61888	N-08120-61410
10	4	5310-01-177-8352	61888	N-08915-13600
10	5	2805-01-176-8559	61888	N-15050-78200
10	6	5310-01-178-1924	61888	N-08916-13600
10	7	2805-01-177-2391	61888	N-15132-58001
10	8	5315-01-178-1673	61888	N-08921-32510
11	1		61888	N-14035-B8500
11	2	5365-01-177-8317	61888	N-14034-14600
11	3	2805-01-178-0752	61888	N-14003-L1100
11	4		61888	N-08931-30210

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
11	5	5310-01-177-8358	61888	N-14037-N3600
11	6	5310-01-178-1665	61888	N-08911-20810
11	7	5310-01-177-8326	61888	N-08915-53810
11	8	5310-01-178-1666	61888	N-08918-10810
11	9	2805-01-177-8587	61888	N-14004-L1101
11	10	5307-01-204-6761	61888	N-08223-83010
11	11	5306-01-169-2062	61888	N-08120-83510
11	12		61888	N-08213-86010
12	1	2910-01-176-8647	61888	N-16010-L6803
12	2		61888	N-16011-L1100
12	3		61888	N-16248-L1100
12	4		61888	99999-01059
12	5		61888	99999-01060
12	6		61888	N-16143-32200
12	7		61888	99999-01067
12	8		61888	N-16195-69200
12	9		61888	99999-01064
12	10		61888	99999-01063
12	11		61888	N-16081-84700
12	12		61888	99999-01070
12	13	4730-01-175-7368	61888	N-16286-74505
12	14		61888	N-16285-84700
12	15		61888	99999-01054
12	16		61888	N-16310-48216
12	17	4730-01-175-7201	61888	N-16286-A8600
12	18		61888	N-16054-A8601
12	19		61888	99999-01086
12	20		61888	99999-01073
12	21		61888	N-16224-08100
12	22		61888	99999-01057
12	23	5320-01-179-1366	61888	N-16062-K7201
12	24	5340-01-176-8440	61888	N-16063-11201
12	25		61888	99999-01049
12	26		61888	99999-01071
12	27		61888	N-16061-84700
12	28		61888	99999-01074
12	29		61888	N-16054-L0715
12	30		61888	99999-01075
12	31	5365-01-177-8119	61888	N-16272-B8201
12	32		61888	N-16033-K7201
12	33		61888	99999-01076
12	34		61888	N-16031-48216
12	35		61888	99999-01077
12	36		61888	99999-01078
12	37	2910-01-178-3009	61888	N-16293-L11000
12	38		61888	N-16193-21600
12	39		61888	N-16114-74505
12	40		61888	N-16145-31301
12	41		61888	99999-01079
12	42		61888	N-16486-U0600
12	43		61888	99999-01080

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
12	44		61888	N-16031-U0600
12	45		61888	N-16337-L0715
12	46		61888	N-16111-L1100
12	47		61888	N-16338-85900
12	48		61888	N-16144-A8600
12	49		61888	99999-01055
12	50	5305-01-178-2028	61888	N-16172-37000
12	51		61888	99999-01065
12	52		61888	99999-01056
12	53		61888	99999-01053
12	54	5310-01-178-1667	61888	N-16124-31300
12	55		61888	99999-01050
12	56		61888	N-16192-L1100
12	57		61888	N-16277-L1100
12	58		61888	99999-01066
12	59	5310-01-177-8327	61888	N-16072-L1100
12	60		61888	N-16128-L1100
12	61		61888	N-16123-L1100
12	62		61888	N-16133-A6111
12	63		61888	99999-01062
12	64		61888	99999-01061
12	65		61888	N-16397-L11000
12	66		61888	99999-01085
12	67		61888	N-16245-35000
12	68		61888	N-16394-0202P
12	69		61888	N-16138-J0110
12	70		61888	N-16092-74500
12	71		61888	N-16060-31300
12	72		61888	N-16094-21600
12	73		61888	99999-01052
12	74		61888	N-16098-N0100
12	75	4730-01-176-8701	61888	N-16111-L100
12	76		61888	N-16049-21605
12	77	2910-01-176-8560	61888	N-16138-A8900
12	78	5306-01-177-8082	61888	N-16108-A3501
12	79		61888	99999-01068
12	80		61888	99999-01072
12	81		61888	99999-01069
12	82	4730-01-175-7408	61888	N-16101-K7201
12	83		61888	99999-01051
12	84	5360-01-177-8143	61888	N-16160-L1100
12	85	2910-01-178-6504	61888	N-16165-J2400
12	86		61888	99999-01082
12	87		61888	99999-01081
12	88		61888	99999-01084
12	89		61888	99999-01083
13	1	5310-01-177-0882	61888	N-08911-30810
13	2	5310-00-959-4679	96906	MS35340-45
13	3	5330-01-177-8216	61888	N-16174-L6200
13	4	5365-01-177-8401	61888	N-14330-L1100
13	5	4710-01-176-8698	61888	N-14331-L11000

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
13	6	4730-01-176-8481	61888	N-08723-11400
13	7	4720-01-178-0680	61888	N-14334-47705
14	1	2910-01-178-9909	61888	N-17010-L1101
14	2	5330-01-177-8217	61888	N-16407-32200
14	3	2910-01-178-7135	61888	20801-02061
14	4	2910-01-176-8696	61888	N-16402-K4046
14	5	5340-01-178-2021	61888	N-16440-35210
14	6		61888	N-16405-10400
14	7	2910-01-178-6630	61888	N-17078-32200
14	8	4730-01-175-7422	61888	N-17103-C0600
14	9	4730-01-175-7423	61888	N-17103-K5001
14	10	5306-01-175-0501	61888	N-08120-83525
14	11	5330-01-175-0467	61888	N-17099-21002
14	12	5365-01-175-0591	61888	N-16420-A0600
15	1		61888	N-16530-K7216
15	2	4730-01-203-3769	61888	N-16531-L1101
15	3	4720-01-176-3934	61888	53031-12111
15	4	4730-01-176-8482	61888	N-16560-L1100
15	5	2940-01-175-6491	61888	23031-00201
15	6		61888	N-16526-L1100
15	7	5330-01-175-0458	61888	N-16713-0101P
15	8	5330-01-175-0457	61888	N-16548-L1100
15	9	2940-01-159-0956	61888	N-16546-L3000
15	10	5330-01-175-0459	61888	N-16518-99003
15	11	5306-01-175-6803	61888	N-16516-L1100
15	12		61888	N-16528-L1101
15	13		61888	N-16509-99009
15	14	5306-01-178-2055	61888	01100-08012
15	15	5310-00-959-4679	96906	MS35340-45
15	16	7690-01-114-3702	19207	12296626
16	1	5306-01-169-7032	61888	01100-08020
16	2	5310-00-959-4679	96906	MS35340-45
16	3	5340-01-185-2168	61888	23652-22071
16	4	5330-01-177-3405	61838	52252-72071
16	5	4720-01-179-2935	61888	23652-22111
16	6	4730-01-185-9489	61888	23652-22121
16	7	2910-00-587-5526	49234	1272D
16	8	5365-01-181-5095	61888	22197-52081
16	9	5330-01-178-3719	61888	22197-52091
16	10	4730-01-178-2949	61888	22512-20152
16	11	4720-01-177-8393	61888	23032-22011
16	12	4730-01-185-9488	61888	23652-23051
16	13	4730-01-180-1816	61888	53652-72101
16	14	4730-01-177-8506	61888	23452-22041
16	15	4820-01-178-6477	61888	23442-20131
17	1	4710-01-176-1299	61888	N-17522-L1100
18	1	5310-01-177-0882	61888	N-08911-30810
18	2		61888	N-08915-13810
18	3	5365-01-174-2784	61888	N-19170-L1100
18	4	5330-01-175-0471	61888	N-19157-L0700
18	5	2910-01-172-8320	61888	N-19100-K7255

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
18	6	3040-01-172-8286	61888	N-19110-K7215
18	7	5330-01-175-0472	61888	N-19159-K0100
18	8	5340-01-178-9237	61888	N-19180-L0100
18	9	4710-01-177-2211	61888	N-19320-L11100
18	10	5340-01-174-2754	61888	N-22472-G0302
19	1	2990-00-838-2590	77910	3A1501
19	2	5975-00-727-5153	96906	MS3367-4-9
19	3	2590-01-178-8907	61888	23035-22011
19	4	4720-01-178-7012	61888	04720-12006
19	5		61888	23652-42371
19	6	5360-01-200-1234	61888	23655-22151
19	7	5315-01-179-4529	61888	02262-06015
19	8		61888	23035-22031
19	9	5310-01-117-2409	61888	02000-00006
19	10	5315-01-184-5786	61888	02200-16010
19	11	5310-01-138-3289	61888	02010-00006
19	12	5310-01-169-8257	61888	01400-00006
19	13	3040-01-186-5751	61888	23035-20201
19	14	3120-01-184-5847	61888	23655-22101
19	15		61888	23035-22001
19	16	5310-01-169-8258	61888	01400-00008
19	17	5310-00-959-4679	96906	MS35340-45
19	18		61888	53032-62001
19	19	5315-01-154-3202	96906	MS171558
19	20	5306-01-169-7032	61888	01100-08020
19	21		61888	24235-22011
19	22	5310-01-182-4095	61888	01400-00010
19	23	5306-01-181-7460	61888	01120-10035
19	24	2540-01-179-3117	61888	23655-22201
19	25	5315-01-179-4528	61888	02262-06020
19	26	5305-01-179-5899	61888	01030-06016
20	1	2990-01-168-3674	61888	23032-33001
20	2	5340-01-172-2691	61888	23452-30301
20	3	5306-01-169-4424	61888	01100-06025
20	4		61888	23452-32021
20	5	5310-01-138-3289	72741	435-006
20	6	5310-01-169-8257	61888	01400-00006
20	7	5306-01-169-0066	61888	01100-10055
20	8	5310-01-122-3214	15526	125ST-M100
20	9	5365-01-168-3196	61888	22252-32241
20	10	5310-01-168-1775	61888	23651-02011
20	11	5310-01-168-3075	61888	22252-32251
20	12	2990-01-168-3725	61888	23652-30201
20	13	4730-01-167-7960	61888	23452-32031
21	1	5365-01-169-8366	61888	22212-10031
21	2	5310-01-102-0328	16004	82024
21	3	5310-01-168-1776	61888	23652-12051
21	4	5306-01-169-0675	61888	01100-08030
21	5	2930-01-173-1353	61888	24442-10201
21	6	4720-01-169-3706	61888	23652-12121
21	7	2930-01-169-1957	61888	23652-12111

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
21	8	4820-01-169-1922	61888	22192-12111
21	9	5330-01-169-0666	61888	22192-12121
21	10	5306-01-167-2284	61888	01100-08014
21	11	5310-00-959-4679	96906	MS35340-45
21	12	2930-01-170-9281	61888	24442-12001
22	1	2930-01-168-3622	61888	23652-12131
23	1		61888	N-08110-83062
23	2	5340-01-168-5586	61888	N-24210-89944
23	3	4730-01-168-8688	61888	N-11060-B8501
23	4	6620-01-172-9965	61888	N-21200-H7800
23	5	5330-01-178-1264	61888	N-11062-S3001
23	6	4730-01-173-8590	61888	N-08723-11600
23	7	5330-01-167-2303	61888	N-14053-L1100
23	8	5340-01-168-5679	61888	N-14052-L1102
23	9	5306-01-167-2285	61888	N-08120-61262
23	10	4720-01-167-4326	61888	N-14055-L1100
23	11	4720-01-167-4325	61888	N-14054-L1100
23	12	4710-01-167-9288	61888	N-16903-L11000
23	13	4720-01-167-7232	61888	23032-12011
23	14	4730-01-167-4402	61888	04911-00044
23	15	4720-01-167-7233	61888	23032-12001
24	1	2930-01-168-2003	61888	N-21010-L1125
24	2	5305-01-176-7669	61888	N-21012-25500
24	3	5365-01-168-3204	61888	N-21013-78202
24	4	5330-01-167-2304	61888	N-21014-78202
24	5	5306-01-168-5544	61888	N-08120-86062
24	6	5310-01-168-5577	61888	N-08915-14010
24	7	5310-01-167-3992	61888	N-08911-14010
24	8	4320-01-167-9215	61888	N-14059-85000
24	9	4730-01-170-7071	61888	N-08931-30610
24	10	4320-01-167-9216	61888	N-14049-Ll100
24	11	5330-01-175-0468	61888	N-21074-69200
25	1	4140-01-175-7081	61888	N-21060-48210
25	2	3020-01-167-9278	61888	N-21051-E0100
25	3	3030-00-864-7398	61888	N-11720-L1102
25	4	5365-01-168-3205	61888	N-21064-J5000
25	5	5306-01-167-2311	61888	N-08120-63562
26	1	6115-01-171-9654	61888	N-23100-M0413
26	2		61888	N-23127-U011
26	3	5310-01-174-2732	61888	N-23158-U0110
26	4		61888	99999-01023
26	5		61888	N-23170-P4510
26	6	6130-01-171-9784	61888	N-23230-U0110
26	7		61888	99999-01022
26	8	5305-01-175-0502	61888	N-23141-P4510
26	9	5977-01-173-7877	61888	N-23133-P4510
26	10	5977-01-173-7832	61888	N-23135-P4510
26	11	5360-01-175-6736	61888	N-23138-A5510
26	12		61888	99999-01024
26	13		61888	N-23102-U0110
26	14	3110-01-177-0938	61888	N-23120-14610

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
26	15		61888	N-23108-M0412
26	16	5310-01-175-0358	61888	N-23153-M0412
26	17		61888	N-23150-B9810
26	18		61888	99999-01026
26	19		61888	N-23118-U0110
26	20		61888	99999-01025
26	21	3110-01-177-0939	61888	N-23120-W1710
26	22	5305-01-175-6801	61888	N-23115-A5510
26	23	5306-01-175-6544	61888	N-23131-U0110
27	1		61888	N-08360-51014
27	2	5306-01-175-6545	61888	N-23164-H0100
27	3	5340-01-175-0561	61888	N-11715-L1103
27	4	5306-01-174-2625	61888	N-08130-80510
27	5	5310-01-175-0540	61888	N-08915-43810
27	6	5365-01-175-7382	61888	N-11712-L6800
27	7	5310-00-959-4679	96906	MS35340-45
27	8	5310-01-178-1665	61888	N-08911-20810
27	9	5310-01-174-2725	61888	N-08915-43510
27	10	5310-01-174-2731	61888	N-08915-13510
27	11	5310-01-173-6535	61888	N-08911-10510
28	1	5306-01-177-8414	61888	01100-06016
28	2	2920-01-173-4558	61888	N-23500-L0411
28	3	5310-01-138-3289	61888	02010-00006
28	4	5310-01-169-8257	61888	01400-00006
29	1	2920-01-181-0148	61888	N-23300-P5113
29	2	2920-01-175-1391	61888	N23343-Y0513
29	3		61888	N-23310-B6010
29	4	5305-01-175-0503	61888	N-23480-M0110
29	5		61888	99999-01039
29	6		61888	99999-01040
29	7	5306-01-175-0483	61888	N-23340-86010
29	8		61888	N-23337-P0610
29	9	3120-01-176-1019	61888	N-23338-P0610
29	10	5310-01-173-6718	61888	N-23460-85010
29	11	5977-01-173-6929	61888	N-23378-E3011
29	12	5360-01-197-0685	61888	N23333-M1510
29	13	5977-01-173-6812	61888	N-23380-U0110
29	14		61888	N-23302-P5110
29	15	5977-01-173-2815	61888	N-23380-E3010
29	16	2920-01-175-1166	61888	N-23465-P0610
29	17		61888	N-23312-Y0511
29	18		61888	N-23318-P5112
29	19	3120-01-176-1020	61888	N-23319-M0110
29	20		61888	N-23322-Y0510
29	21		61888	N-23475-E3010
30	1	5310-01-177-0882	61888	N-08911-30810
30	2	5310-00-959-4679	96906	MS35340-45
30	3		61888	N-08911-24010
30	4	5307-01-174-2738	61888	N-08227-24010
30	5	5310-00-959-4679	96906	MS35340-45
30	6		61888	N-08915-44010

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
31	1	5305-01-175-0505	61888	N-08110-81626
31	2	2920-01-182-7786	61888	N-22450-L1051
31	3		61888	N-22450-Y4401
31	4		61888	N-22431-10560
31	5		61888	N-22454-80001
31	6		61888	N-22453-66001
31	7		61888	N-22452-66001
31	8		61888	N-22451-66001
31	9		19728	14G5
31	10	5305-01-175-6802	61888	N-08120-62262
31	11	5305-01-174-4700	61888	N-08360-61226
31	12	5330-01-175-0469	61888	N-22180-71200
31	13		61888	N-22178-73600
31	14	5330-01-175-0470	61888	N-22179-E3000
31	15	5305-01-175-0504	61888	N-08110-81225
31	16	2920-01-209-4614	61888	N-22433-L1110
31	17	5340-01-175-6546	61888	N-22435-L1101
31	18	4710-01-173-4090	61888	N-22318-25501
32	1	2920-01-175-1119	61888	N-22100-K7201
32	2	5305-01-175-0359	61888	N-22750-H2300
32	3	2920-01-174-9514	61888	N-22132-20605
32	4	2920-01-175-1293	61888	N-22109-71300
32	5	5360-01-175-6742	61888	N-22110-K7201
32	6	5310-01-174-4643	61888	N-22160-M0800
32	7		61888	N-22108-71302
32	8		61888	N-22403-18005
32	9	5910-01-186-5077	61888	N-22102-D11000
32	10		61888	N-22119-71300
32	11	4820-01-173-9510	61888	N-22301-K7201
32	12	2920-01-174-9517	61888	N-22136-H2300
32	13		19728	SRP-2227
32	14	2920-01-173-9614	61888	N-22182-71300
32	15	2920-01-173-7687	61888	N-22183-71300
32	16	2920-01-159-0869	61888	N-22157-H1001
32	17		61888	N-22162-N8800
32	18		61888	N-22165-30101
33	1	6645-01-174-0860	61888	24352-42031
33	2	5305-01-175-6920	61888	01030-04012
33	3	6210-01-172-8352	61888	23302-42301
33	4	6240-00-013-1282	81348	W-L-00111/61
33	5	6625-01-175-1699	61888	25079-10322A
33	6	6620-01-172-5497	61888	23652-42351
33	7	6680-01-173-3267	61888	22672-42061
33	8	2920-01-195-7297	13445	956-3125
33	9	5306-01-175-3615	61888	01100-04016
33	10	5310-01-174-2726	61888	02000-00004
33	11		61888	78260-69316
33	12		61888	78260-69312
33	13	5975-00-727-5153	96906	MS3367-4-9
33	14	3930-01-189-1610	61888	78260-69322
33	15	5305-01-207-9337	61888	23656-42331

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FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
33	16	5310-01-174-4565	61888	01400-00004
34	1	5995-01-176-2930	61888	78260-69313
35	1	2920-01-176-2931	61888	78260-69314
36	1	5995-01-176-2932	61888	78260-69315
36	2	2920-01-174-9402	61888	22192-42171
37	1	5995-01-222-8739	61888	78260-69317
38	1	5920-01-216-6121	61888	23652-42341
38	2	5920-00-539-6920	81349	F03A125V30A
38	3	5920-00-879-6285	81349	F02A125V10AS
38	4	5930-01-193-5257	61888	23232-42072
38	5	5930-01-174-1175	61888	23652-42221
39	1	6220-00-774-4704	75175	860-2301
39	2	6240-00-809-4977	24446	4412
39	3	6220-01-182-2554	61888	22672-40201
39	4	6240-00-889-1799	08108	1157
39	5	6220-01-182-5845	61888	22672-49311
40	1	5930-01-173-9020	61888	N-25240-89910
40	2	4730-01-174-8948	61888	N-25251-37700
40	3	6620-01-173-8804	61888	N-25080-89900
41	1	5306-01-177-8415	61888	01100-05012
41	2	5310-01-177-3840	61888	02010-00005
41	3	6680-01-173-3277	61888	23652-23011
41	4	5330-01-175-6976	61888	23642-20042
42	1	2590-01-173-4713	61888	20712-40273
42	2	5306-01-177-8416	61888	01100-06010
42	3		61888	24354-12051
42	4		61888	24354-12041
42	5		61888	24354-12031
42	6		61888	24354-12021
43	1	5975-00-074-2072	06383	SST2
43	2		61888	23652-42371
43	3	4720-01-178-7012	61888	04720-12006
43	4	5310-01-177-0884	61888	01420-00006
43	5	5310-01-138-3289	61888	02010-00006
43	6	5310-01-174-8244	61888	23452-42181
43	7	6140-01-171-9451	61888	23032-42001
43	8	5306-01-175-6930	61888	23652-42041
43	9		61888	78247-28201
43	10		61888	23652-43001
43	11	5306-01-178-2055	61888	01100-08012
43	12	5310-00-959-4679	96906	MS35340-45
44	1	6140-01-174-9403	61888	23652-43031
44	2	6140-01-171-9495	61888	23652-43041
44	3	5306-01-178-2051	61888	23452-43291
44	4	5310-01-117-2409	62983	471061
45	1	5315-01-169-3199	61888	02270-06030
45	2		61888	24363-90202
45	3		61888	24363-92002
45	4	5340-01-169-3026	61888	10070-00019
45	5	5306-01-169-0676	61888	01103-10040
45	6		61888	24363-90211

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FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
45	7	3120-01-167-9436	61888	23663-92111
45	8		61888	24363-92021
45	9	5310-01-168-3942	61888	02011-00010
45	10	5310-01-171-5310	61888	01400-10010
45	11	5310-01-169-8258	61888	01400-00008
45	12	5310-00-959-4679	96906	MS35340-45
45	13	3040-01-167-7200	61888	24357-42101
45	14	5310-01-169-7105	61888	01407-00008
45	15	5340-01-168-5600	61888	23663-92091
45	16		61888	24243-90101
45	17		61888	01100-08035
45	18	3040-01-167-7199	61888	24357-42091
45	19	5310-01-173-3610	61888	01402-00008
45	20		61888	23663-90252
46	1	3110-00-100-6151	96906	MS19059-2414
46	2		61888	12163-82022
46	3		61888	03300-00110
46	4	4730-01-178-8838	61888	22518-40151
46	5	5310-01-168-3942	61888	02011-00010
46	6	5306-01-169-0683	61888	01103-10075
46	7	5306-00-206-6003	19710	1595893
46	8	5330-01-168-3945	61888	12163-82561
46	9	5306-01-169-0679	61888	01106-08045
46	10	5306-01-169-0678	61888	01106-08040
46	11	5306-01-171-8664	61888	01100-10050
46	12	5306-01-169-0684	61888	01103-10050
46	13	5306-01-169-2899	61888	01103-10055
46	14	5310-01-173-3641	61888	02010-00010
46	15	5310-01-182-4095	61888	01400-00010
46	16	2520-01-167-7128	61888	12163-82001
46	17	3120-01-169-7168	61888	AE09910-043
46	18	4730-01-167-2824	61888	04901-00191
46	19	5365-01-171-1261	61888	12163-82541
46	20	5315-01-169-9454	61888	02212-12020
46	21		61888	03310-00650
46	22	2520-01-169-7336	61888	12163-82071
46	23	2520-01-167-7977	61888	12163-80301
47	1	3040-01-167-9258	61888	13063-82021
47	2	5305-01-170-3771	61888	BK8051400800
47	3	5310-01-167-2318	61888	BK6504420000
47	4	2520-01-169-1934	61888	1216380301
47	5	5310-01-168-3935	61888	12163-82631
47	6	5306-01-169-0677	61888	12163-82621
47	7	5305-01-169-0072	61888	01103-08025
47	8	5310-01-172-0957	61888	02011-00008
48	1	2520-01-183-2219	61888	14442-50002
48	2	5340-01-170-6613	61888	12163-82341
48	3		61888	12163-82421
48	4	5360-01-170-6585	61888	12163-82331
48	5	2520-01-169-8694	61888	12163-82321
48	6	5365-01-169-6531	61888	23870-52871

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
48	7	4730-01-169-7643	61888	04000-00100
48	8	5305-01-171-3980	61888	12163-82291
48	9	5330-01-168-3945	61888	12163-82561
48	10	5306-01-170-4551	61888	01100-10035
48	11	5310-01-173-3641	61888	02010-00010
48	12	4820-01-168-3462	61888	12163-82241
48	13	4730-01-178-8838	61888	22518-40151
48	14	5315-00-664-6213	96906	MS16562-232
48	15		61888	02011-00008
48	16	5306-01-171-5896	61888	01103-08035
48	17		61888	03300-00160
48	18	3040-01-167-7089	61888	12163-80281
48	19	5315-01-173-0396	61888	02360-05019
48	20	3110-00-554-3197	34623	A1007
48	21	3040-01-169-7706	61888	12163-42201
48	22	3020-01-169-7393	61888	12163-42211
48	23	5365-01-169-8360	61888	AE-481J2400
48	24		52676	6207J
48	25	3020-01-170-4747	61888	12163-42231
48	26	5305-01-169-0072	61888	01103-08025
48	27	5306-01-170-3176	61888	01103-08050
48	28	2520-01-170-0826	61888	14463-80262
48	29		61888	14463-82012
48	30		61888	14453-22031
48	31		61888	14453-52111
48	32	5306-01-170-4552	61888	15413-22021
48	33	5306-01-171-8073	61888	01103-08020
48	34		61888	02011-00008
48	35	5330-01-171-8041	61888	12163-82111
48	36		61888	03310-00450
48	37	4730-01-178-8838	61888	22518-40151
48	38	5330-01-178-3715	61888	03300-00120
48	39	5365-01-171-1261	61888	12163-82541
48	40	5306-01-170-3175	61888	01103-08055
48	41	4710-01-169-7354	61888	12163-82221
48	42	3040-01-167-7202	61888	12163-82251
48	43	5315-01-169-3200	61888	02270-06032
48	44	5340-01-171-7935	61888	12163-82232
48	45	2920-01-169-7378	61888	12163-82281
48	46		61888	12163-82361
48	47	5306-01-173-6776	61888	01100-10030
48	48	5340-01-170-6616	61888	12163-82431
48	49	5306-01-170-3177	61888	01106-12055
48	50	5310-01-171-8126	61888	02011-00012
48	51	5306-01-170-4553	61888	01106-12040
48	52		61888	AE-661A1020
48	53	5330-01-170-1363	61888	24452-52001
49	1	4820-01-168-9583	61888	12163-80241
49	2	5365-01-168-9093	61888	BK7133021000
49	3	5360-01-168-5496	61888	BK7134011001
49	4	4820-01-168-9566	61888	0319000013

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
49	5		61888	BK7134001000
49	6	5330-01-168-3873	61888	BK7134013000
49	7		61888	BK7134003000
49	8	5360-01-168-5493	61888	BK7134004000
49	9		61888	BK7134002000
49	10	5360-01-168-5494	61888	BK7134005000
49	11	5360-01-168-5495	61888	BK7134007000
49	12		61888	8K7134006000
49	13	5306-01-168-8972	61888	BK8054071400
49	14	5340-01-168-9207	61888	BK7134008000
50	1	2520-01-170-5421	61888	12163-80251
50	2		61888	BK8131010350
50	3		61888	BK7135007000
50	4		61888	BK7105038000
50	5	5360-01-169-6754	61888	BK-7105039001
50	6		61888	BK7135002000
50	7		61888	BK7135003000
50	8		61888	BK7135015000
50	9	4820-01-169-9600	61888	BK7135013000
50	10		61888	BK8101607010
50	11		61888	BK7135001000
50	12	5365-01-169-6532	61888	BK8059940700
50	13		61888	BK7135009000
50	14		61888	BK7135010000
50	15	5310-01-074-2101	61080	50002700
50	16	5306-01-168-9895	61888	BK8051072000
51	1	2520-01-169-2842	61888	12163-80231
51	2	2520-01-168-1646	61888	BK7089002000
51	3		61888	BK7065021000
51	4		61888	BK7753033000
51	5		61888	BK7089004000
51	6		61888	BK7031018000
51	7	2520-01-168-2135	61888	BK-708909000
51	8	2520-01-167-7184	61888	BK7501024000
51	9	2520-01-190-2445	61888	BK7089010000
51	10	5365-01-168-5423	61888	BK7089011000
51	11	5360-01-168-5497	61888	BK7089005001
51	12	5360-01-230-4568	61888	BK7089006000
51	13		61888	BK8131040060
51	14	3120-01-168-9152	61888	BK7089014000
51	15	3020-01-170-4750	61888	BK7089013001
51	16	3120-01-168-5566	61888	BK7089015000
51	17	3110-01-168-9078	61888	BK8113301610
51	18		61888	BK8131030100
51	19		61888	BK7050003000
51	20	5305-01-168-5424	61888	BK8059090800
51	21	3040-01-169-9696	61888	BK7089001003
51	22		61888	BK7089020000
51	23	3110-01-168-9074	61888	BK8111301640
51	24	3020-01-170-4749	61888	BK7089012001
52	1	4730-01-171-1974	61888	AE-09490-107

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
52	2	5330-01-170-4610	61888	23467-82041
52	3		61888	12163-82391
52	4	4730-01-170-9791	61888	12163-82441
52	5	4730-01-170-4663	61888	12163-82311
52	6	4330-01-169-4968	61888	12163-82301
52	7	5340-01-171-8007	61888	27132-40171
52	8	4720-01-169-7633	61888	23047-82011
52	9	4720-01-169-1949	61888	23047-82001
52	10		61888	03300-10220
52	11	5365-01-169-5705	61888	02100-00035
52	12	5330-01-178-3358	61888	03310-00300
52	13	4730-01-169-1915	61888	12163-82531
52	14	5365-01-169-6531	61888	23870-52871
52	15	4730-01-170-4676	61888	12163-82611
52	16	4710-01-170-4012	61888	12163-82371
53	1	2520-01-170-2523	61888	12163-80221
53	2	5306-01-170-3723	61888	BK8052092530
53	3	5330-01-169-6755	61888	BK-K700300813
53	4	5365-01-167-6268	61888	BK7119041000
53	5	5315-01-168-8973	61888	BK1025166000
53	6		61888	BK8105009030
53	7		61888	BK7304008000
53	8		61888	8K7304001000
53	9	3040-01-169-7656	61888	BK7304005000
53	10		61888	BK8112151310
53	11		61888	BK7304003000
53	12		61888	BK7304002000
53	13		61888	BK7304006000
53	14		61888	BK7304012000
54	1		61888	99999-01000
54	2	2520-01-169-2712	61888	24453-02113
54	3	5340-01-169-6828	61888	22253-02061
54	4	4730-01-168-6414	61888	22193-03001
54	5	2530-01-179-6532	61888	24453-02131
54	6	5330-01-168-5649	61888	24453-02121
54	7	5330-01-168-5641	61888	23653-02001
54	8	3110-01-169-4440	61888	03071-30214
54	9	2530-01-171-2208	61888	24453-02031
54	10	3110-01-169-2117	61888	23453-02071
54	11	5330-01-168-5640	61888	23453-02131
54	12	5365-01-168-5739	61888	23453-02091
54	13	5310-01-168-3934	61888	03192-10012
54	14	5310-01-169-2914	61888	03192-00012
54	15	5307-01-169-0132	61888	25303-02102
54	16	5305-01-172-6455	61888	24453-02061
54	17	2520-01-167-7209	61888	24453-02021
54	18	5330-01-168-9246	61888	24453-02101
54	19	5310-01-184-5783	61888	01400-10020
55	1		61888	99999-01001
55	2	5306-01-170-3178	61888	01100-10025
55	3	5310-01-173-3641	61888	02010-00010

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
55	4	3110-01-171-1096	61888	12003-22051
55	5		61888	03310-00700
55	6		61888	15413-22101
55	7		61888	15413-22091
55	8		61888	15413-22081
55	9	3110-01-170-8565	61888	12003-43011
55	10	3040-01-169-7383	61888	14453-22011
55	11	5365-01-173-3752	61888	12003-22041
55	12	3020-01-172-0667	61888	14463-42601
55	13		61888	14453-22021
55	14		61888	14463-42001
55	15	5306-01-172-2547	61888	14453-52041
55	16	3110-01-224-1359	61888	03000-06213
55	17	2520-01-169-1916	61888	14453-59801
55	18		61888	14453-52032
55	19		61888	14453-52022
55	20	5365-01-168-4113	61888	14453-52081
55	21	5365-01-168-4112	61888	14453-52071
55	22	5365-01-168-4111	61888	16113-52141
55	23	3020-01-170-5404	61888	14453-52002
55	24		61888	16113-52121
55	25	3020-01-170-2556	61888	16113-52112
55	26		61888	14453-52091
55	27		61888	14453-52101
55	28	5315-01-171-8835	61888	02212-06030
55	29	5310-01-171-5310	61888	01400-10010
55	30		61888	10113-50141
55	31	5340-01-170-8562	61888	14453-52061
55	32	5305-01-170-6190	61888	14453-52051
55	33	3020-01-169-9771	61888	14453-52011
55	34		61888	01103-08020
55	35		61888	02011-00008
55	36	3110-01-169-5711	61888	12163-82151
55	37	5365-01-169-8368	61888	12163-82571
55	38	5365-01-168-5736	61888	12163-82581
55	39	5365-01-168-5741	61888	12163-82591
55	40		61888	12163-82191
55	41	3110-01-168-9079	61888	12003-43031
55	42		61888	12163-82131
55	43	5330-01-169-6408	61888	12163-82121
55	44		61888	03310-00750
55	45	3110-01-171-5322	61888	12003-43021
55	46		61888	12163-82501
55	47		61888	12163-82511
55	48		61888	12163-82521
55	49	5310-01-169-4430	61888	12163-82141
55	50	5310-01-169-0705	61888	03192-10007
56	1		61888	23654-32081
56	2		61888	24454-32391
56	3		61888	03146-13201
56	4		61888	20314-30161

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
56	5		61888	04901-00100
56	6		61888	22214-30321
56	7	2530-01-176-2853	61888	24454-30511
56	8	2530-01-176-9579	61888	24454-30411
56	9	3040-01-175-1156	61888	24454-32091
56	10	2530-01-176-2923	61888	24454-32101
56	11	2530-01-178-6658	61888	24454-32201
56	12	4730-01-167-2824	61888	04901-00191
56	13	5310-01-174-8245	61888	23458-52031
56	14	4730-01-167-2824	61888	04901-00190
56	15	4730-01-167-2824	61888	04901-00191
56	16		61888	23654-32081
56	17		61888	03146-13201
56	18		61888	23654-32161
56	19	5306-01-177-8417	61888	01100-12030
56	20	5310-01-176-5875	61888	01402-00012
56	21	5315-01-176-7447	61888	24454-32161
56	22		61888	20224-30061
56	23	5310-00-959-4679	96906	MS35340-45
56	24	5306-01-178-2059	61888	01100-08015
56	25	2530-01-176-9624	61888	24454-32231
56	26	4730-01-167-2824	61888	04901-00190
56	27	5310-01-182-4095	61888	01400-00010
56	28	5310-01-173-3641	61888	02010-00010
56	29	5310-01-122-3214	15526	125ST-M100
56	30		61888	22214-30321
56	31	5340-01-176-7867	61888	24454-32171
56	32		61888	03126-83201
57	1	3040-01-169-7710	61888	23655-50301
57	2	5306-01-178-2059	61888	01100-08015
57	3	5310-00-959-4679	96906	MS35340-45
57	4	5315-00-236-8357	96906	MS24665-368
57	5		61888	02000-00008
57	6	5340-01-170-3216	61888	23455-52001
57	7	5310-01-180-4765	61888	01402-00006
57	8	5340-01-169-6785	61888	22195-52001
57	9	2590-01-168-7620	61888	23655-50101A
57	10	5306-01-169-7032	61888	01100-08020
57	11	5340-01-170-4624	61888	24235-52001
57	12		61888	02200-16015
57	13	5315-01-169-5672	61888	02262-08020
57	14	5360-01-168-5726	61888	23655-32211
57	15	5340-01-170-0761	61888	23655-52051
57	16	5310-01-173-3610	61888	01402-00008
57	17	3040-01-167-7199	61888	24357-42091
57	18		61888	23655-52031
57	19	5310-01-168-3936	61888	02000-00024
57	20	5315-00-852-4113	96906	MS24665-639
58	1		61888	24453-70214-1202-01
58	1	2530-01-192-6074	61888	24453-70204-1202-02

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FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
58	2		61888	C52-11246-11000
58	2		61888	C52-11246-21000
58	3	4010-01-168-9140	61888	C52-11246-54602
58	4	5340-01-169-5420	61888	C90-9200-0800
58	5	5310-01-169-9620	61888	22673-72001
58	6	5305-01-171-8095	61888	20423-50283
58	7	5306-01-170-4555	61888	24453-72061
58	8		61888	C52-11242-73000
58	9	2530-01-176-0542	61888	C52-11242-83010
58	9	2530-01-176-0543	61888	C52-11242-83020
58	10	2530-01-178-8572	6]888	C52-11239-51270
58	11	5360-01-168-5498	61888	C52-11242-55090
58	12	2530-01-168-9350	61888	C52-11003-05143
58	13	5360-01-170-3738	61888	C52-11242-54011
58	13	5360-01-177-7524	61888	C52-11242-54010
58	14	5360-01-168-9106	61888	C52-11232-54540
58	15	2530-01-168-9407	61888	C52-11242-14530
58	15	2530-01-168-9595	61888	C52-11242-24530
58	16		61888	C52-11246-54071
58	17	5360-01-168-5616	61888	C52-11218-15161
58	17	5360-01-168-5617	61888	C52-11218-25161
58	18	2530-01-170-0839	61888	C52-11218-25151
58	18	2530-01-170-2579	61888	C52-11218-15151
58	19	2530-01-170-9823	61888	C52-11242-13300
58	19	2530-01-170-9824	61888	C52-11242-23300
58	20	5340-01-170-4546	61888	C52-51302-53840
58	21	5360-01-169-7127	61888	C52-11105-54110
58	22	5330-01-168-9167	61888	C52-10901-64560
58	23	5310-01-168-5579	61888	C52-10901-64550
58	24	2530-01-170-0840	61888	C52-11242-24500
58	24	2530-01-170-2580	61888	C52-11242-14500
58	25	5340-01-178-8456	61888	C52-11204-69010
58	26	5315-01-169-7033	61898	C52-51308-54160
58	27	5306-01-174-4514	61888	C90-0567-0820
58	29	2530-01-168-3698	61888	C52-11246-52001
58	29		61888	99999-01007
58	30		61888	99999-01009
58	31		61888	99999-01008
59	1	2530-01-169-4942	61888	23775-42101
59	2	4720-01-168-7613	61888	23655-42271
59	3	5315-00-842-3044	96906	MS24665-283
59	4		61888	02000-00008
59	5	5310-01-182-4095	61888	01400-00010
59	6	5310-01-173-3641	61888	02010-00010
59	7	5315-01-169-5672	61888	02262-08020
59	8	4710-01-169-5404	61888	24465-42001
59	9	5306-01-170-4551	61888	01100-10035
59	10	5340-01-170-8608	61888	24465-42021
59	11	4720-01-172-0593	61888	1204-11
59	12	4710-01-169-4992	61888	24455-42041
59	13	5310-01-169-8267	61888	02000-00012

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FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
59	14	4030-01-171-7956	61888	23745-42101
59	15	4710-01-169-5405	61888	24455-42021
59	16	5340-01-172-2800	61888	24455-42061
60	1	2530-01-192-0534	61888	78260-69353
60	2	2530-01-169-4941	61888	BE-0839-49-698
60	3	4730-01-169-2661	61888	BE-2657-49-699
60	4	3120-01-168-9144	61888	BE-0839-49-686A
61	1	4730-00-172-0058	96906	MS15006-4
61	2	5365-01-172-9473	61888	02100-00020
61	3	5310-01-168-5571	61888	02000-00020
61	4		61888	23685-40301
61	5		61888	23658-42031
61	6	3120-01-171-8148	61888	23665-43111
61	7	5340-01-176-7364	61888	23745-42052
61	8	5310-01-172-3284	61888	01405-00010
61	9	5340-01-172-6438	61888	23745-42031
61	10	5310-01-182-4095	61888	01400-00010
61	11	5340-01-172-6380	61888	23745-42042
61	12	5315-01-175-0663	61888	23745-42901
61	13	5310-01-122-3214	15526	125ST-M100
61	14	5315-00-839-5822	96906	MS24665-353
61	15		61888	02200-02015
61	16	5310-01-102-0328	16004	82024
61	17	5315-01-170-6442	61888	02262-08030
61	18		61888	24245-42101
61	19	2540-01-169-4943	61888	23685-40201
61	20		61888	23685-40211
61	21	3120-01-170-3845	61888	23655-42421
61	22	2540-01-168-2154	61888	20315-30021
61	23	2540-01-174-6227	61888	23685-40251
61	24		61888	23685-40261
61	25	3120-01-170-3845	61888	23655-42421
61	26	5306-01-172-2523	61888	01100-10040
61	27	5360-01-171-7984	61888	23235-40091
61	28	5310-01-173-3641	61888	02010-00010
61	29	5340-01-174-3425	61888	23685-42061
61	30	5310-01-173-3610	61888	01402-00008
61	31	5306-01-170-4556	61888	01120-08030
61	32	5360-01-170-6598	61888	20155-30061
61	33	5340-01-169-5465	61888	23655-42431
61	34	5310-00-959-4679	96906	MS35340-45
61	35	5306-01-178-2059	61888	01100-08015
61	36		61888	24235-42091
62	1	5310-01-180-2439	61888	23913-02041
62	2		61888	24454-40211
62	3	2530-01-177-4888	61888	24454-40221
62	4	2530-01-178-8915	61888	22439-44031
63	1	2530-01-174-9519	61888	22194-32361
63	2	5315-01-184-5787	61888	02200-06055
63	3	5310-01-177-0881	61888	01412-00030
63	4	5310-01-177-3830	61888	02000-00030

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
63	5	3110-01-136-5383	61888	03071-30206
63	6	2530-01-176-8539	61888	20224-40014
63	7	3110-01-179-4452	61888	03071-30211
63	8	5330-01-177-3845	61888	03217-08501
63	9		61888	23654-32041
63	10		61888	23654-34051
63	11		61888	52436-80801
63	12	2530-01-177-2493	61888	22304-40302
63	13		61888	99999-01048
63	14		61888	99999-01047
63	15	5310-01-178-3700	61888	01400-00012
63	16	5310-01-169-9632	61888	02010-00012
63	17	5306-01-178-3344	61888	01100-12025
64	1	2610-01-175-0611	81348	GP1/TYC/815/28X9 -15/F/FL/ROCKLUG
64	2	2610-01-174-7718	81348	ZZ-I-550/815/28X 9-15/TR77A/ONCTR
64	3	2640-00-472-8645	73842	10F64
65	1	2610-00-246-2829	81348	GPIC/6.50-10/E/F LTR
65	2	2610-01-174-7717	81348	GP5/6.50-10/TR15 OCW/OFF CENTER
65	3	2640-00-472-8645	73842	10F64
66	1	5325-01-170-8581	61888	22114-10031
66	2		61888	23654-13001
66	3	5310-01-122-3214	15526	125ST-M10
66	4	5310-01-173-3641	61888	02010-00010
66	5	5306-01-173-6776	61888	01100-10030
66	6	5310-01-169-9632	61888	02010-00012
66	7	5306-01-177-8417	61888	01100-12030
66	8	2530-01-168-3745	61888	14354-10201
66	9		61888	14354-10301
66	10		61888	14354-10401
66	11		61888	99999-01041
66	12		61888	B-23641-03703
66	13	3110-01-168-9080	61888	14354-12001
66	14		61888	14354-12021
66	15	5365-01-169-5706	61888	02110-00048
66	16	2530-01-170-3966	61888	14354-10501
66	17		61888	B-23641-06601
66	18		61888	B-23441-04902
66	19		61888	B-23641-06801
66	20		61888	B-23641-06901
66	21		61888	B-23641-03311
66	22		61888	B-23642-00722
66	23	2530-01-170-7114	61888	14354-10601
66	24		61888	99999-01042
66	25		61888	B-23641-03702
66	26		61888	14354-10701
66	27	5365-01-169-5641	61888	14354-12051
66	28	5325-01-168-8974	61888	14354-12071

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
66	29	2530-01-168-3647	61888	14354-10801
66	30	3120-01-169-8298	61888	14354-12091
66	31		61888	14354-12061
66	32		61888	14354-12041
66	33		61888	14354-12031
66	34	3040-01-169-7709	61888	14354-10902
66	35		61888	B-23641-00516
66	36	2530-01-168-3648	61888	14354-12111
66	37	5360-01-168-5491	61888	14354-12121
66	38	3040-01-169-1974	61888	14354-12101
66	39	5360-01-168-5492	61888	14354-12131
66	40		61888	B-23642-00422
66	41		61888	14354-12201
66	42	5365-01-168-5604	61888	14354-12141
66	43		61888	14354-12161
66	44	5365-01-168-5605	61888	14354-12151
66	45	5310-01-168-5426	61888	14354-12171
66	46	5340-01-168-3510	61888	14354-12181
66	47	5310-01-173-3641	61888	02010-00010
66	48	5306-01-171-3975	61888	01106-10058
66	49	3040-01-169-7349	61888	14354-12231
66	50	5365-01-168-9990	61888	14354-12221
66	51	5305-01-168-5543	61888	14354-12211
66	52		61888	14354-12241
66	53	5306-01-173-3497	61888	01103-10025
66	54	5330-01-168-5508	61888	14354-12251
66	55	5310-01-170-8507	61888	01402-10010
66	56	5310-01-168-5427	61888	14354-12261
66	57	5310-01-168-5572	61888	14354-12271
66	58	5310-01-169-5549	61888	01402-00014
66	59	5365-01-168-5606	61888	14354-12191
66	60	5310-00-011-6125	96906	MS35338-71
66	61	5310-01-172-5573	61888	01400-00022
67	1	2530-01-167-9270	61888	24354-12001
67	2		61888	24354-12011
67	3	5340-01-171-8066	61888	24354-12061
67	4		61888	27919-12041
67	5	2530-01-170-9289	61888	24234-30551
67	6		61888	24234-32331
67	7		61888	24234-32341
67	8		61888	24234-32351
67	9	5310-01-169-2907	61888	01412-10016
67	10	5315-01-171-4015	61888	02200-32032
67	11	3040-01-169-7743	61888	24234-30561
67	12		61888	24234-30561
67	13		61888	24234-32391
67	14		61888	24234-32351
67	15	5315-01-171-4015	61888	02200-32032
67	16	5310-01-169-2907	61888	01412-10016
67	17	5310-01-174-6085	61888	24234-32421
67	18	5340-01-169-5421	61888	24454-32251

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FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
67	19	5310-01-172-0027	61888	24234-32411
67	20	5310-01-169-5551	61888	01407-00022
67	21	5340-01-176-0823	61888	24454-52011
67	22	5310-01-172-0529	61888	01400-00024
67	23	2530-01-168-2152	61888	24454-22011
67	24	5310-01-169-5550	61888	01402-00022
67	25	3040-01-169-7416	61888	24454-22021
68	1	4730-01-176-2806	61888	57246-04101
68	2	5330-01-177-5916	61888	03320-00140
68	3		61888	57246-02251
68	4	4730-01-177-3782	61888	04911-00023
68	5	4720-01-178-0656	61888	0471C-04090
68	6	4720-01-178-7013	61888	04710-04021
68	7	4730-01-179-5410	61888	04150-00202
68	8	5330-01-177-3849	61888	03320-00110
68	9	4730-00-173-1884	61888	04134-00202
68	10	5330-01-177-3849	61888	03320-00110
68	11	5975-01-084-0977	53421	T50R
68	12	5340-01-175-4276	61888	20317-60331
68	13	5310-00-959-4679	96906	MS35340-45
68	14	5306-01-180-4730	61888	01100-08025
68	15	4720-01-177-0974	61888	23657-62491
68	16	5330-01-177-5916	61888	03320-00140
68	17		61888	04134-00303
68	18	4720-01-178-0655	61888	04461-03055
68	19	4720-01-176-2810	61888	23657-62481
68	20	4730-01-176-2807	61888	23657-60311
68	21	5330-01-177-5916	61888	03320-00140
68	22		61888	23657-62501
69	1		61888	23654-52251
69	2	5315-01-177-8510	61888	02200-04040
69	3	5310-01-179-1121	61888	23654-52181
69	4		61888	23654-52101
69	5	2530-01-178-6631	61888	23654-52151
69	6	5310-01-178-3699	61888	01402-00024
69	7	5310-01-179-1285	61888	23654-52161
69	8	3040-01-178-7132	61888	23654-52251
69	9	5310-01-177-8083	61888	23654-52231
69	10		61888	23654-52221
69	11		61888	23654-52211
69	12		61888	03300-00500
69	13		61888	23654-52121
69	14		61888	03310-00550
69	15	3930-01-188-3270	61888	23654-52131
69	16		61888	23654-52141
69	17		61888	22198-52101
69	18	5365-01-177-4014	61888	02110-00042
70	1	4820-01-176-6098	61888	24457-60301
70	2	5360-01-177-8126	61888	B-21731-30306
70	3	4820-01-176-5857	61888	8-21731-30501
70	4		61888	99999-01045

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
70	5	5330-01-178-3715	61888	03300-00120
70	6		61888	B-21731-30403
70	7	5310-00-959-4679	96906	MS35340-45
70	8	5310-01-169-8258	61888	01400-00008
70	9	5305-01-177-9716	61888	B-91511-08201
70	10		61888	99999-01044
70	11	5360-01-177-8125	61888	B-21621-50501
70	12	2530-01-178-6632	61888	B-21731-30605
70	13	5330-01-177-3850	61888	03300-00180
70	14	5306-01-169-7032	61888	01100-08020
70	15	4730-01-178-8837	61888	04000-00200
70	16	5340-01-178-2038	61888	B-21731-30601
70	17	5330-01-177-3851	61888	03320-00240
70	18		61888	99999-01043
70	19	4730-01-177-3775	61888	B-21733-40201
70	20	5306-01-178-9238	61888	01103-06055
70	21	5310-01-138-3289	61888	02010-00006
71	1	3930-01-177-1014	61888	53655-02001
71	2	5310-01-178-3700	61888	01400-00012
71	3	5310-01-169-9632	61888	02010-00012
71	4	2510-01-176-2854	61888	53655-10201
71	5	5306-01-177-0870	61888	53655-12291
71	6	6210-01-172-3131	61888	23079-32001
71	7	9905-01-174-0975	61888	20229-10993
71	8	5306-01-177-8417	61888	01100-12030
71	9	5310-01-169-9632	61888	0201G-00012
71	10	5340-01-184-5904	61888	53655-12321
71	11	2510-01-176-9556	61888	53655-10412
71	12	3120-01-176-1021	61888	23656-12621
71	13	3040-01-174-9341	61888	22216-10262
71	14	5310-01-177-5914	61888	02010-00020
71	15		61888	01100-20080
71	16	5306-01-178-3680	61888	01100-16065
71	17	5310-01-177-0901	61888	02010-00016
71	18	5340-01-174-8438	61888	22018-30064
71	19		61888	78260-69333
71	20	3930-01-189-1610	61888	78260-69322
71	21	5310-01-177-5903	61888	22191-02011
71	22	5340-01-179-5947	61888	53655-12331
71	23	2510-01-176-6019	61888	78260-69331
71	24	5325-01-176-1049	61888	23652-42081
71	25	5340-01-179-5967	61888	53655-10402
71	26	4720-01-181-0111	61888	04720-10140
71	27	4730-01-177-4727	61888	22192-22091
71	28		61888	23329-12051
72	1		61888	24459-32001
72	2	5315-01-176-1104	61888	22676-32041
72	3	5310-01-177-5912	61888	02010-00030
72	4		61888	22216-30051
72	5	5306-01-178-7389	61888	01110-30180
73	1	2510-01-183-0019	61888	78260-69319

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FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
73	2	5320-01-179-1192	61888	02432-01008
73	3	9905-01-174-0954	61888	78260-69690
73	4	5310-01-122-3214	15526	125ST-M100
73	5	5310-01-173-3641	61888	02010-00010
73	6	5306-01-178-2058	61888	01100-10020
73	7		61888	63110-18281
73	8		61888	27919-12201
73	9		61888	27919-12191
73	10	7690-01-174-3676	61888	78260-69341
73	11	5340-01-181-3561	61888	23656-40401
73	12	5340-01-181-5102	61888	24356-40601
73	13	5305-01-207-9337	61888	23656-42331
73	14	5310-01-175-9279	61888	78260-69327
73	15	5310-01-122-3214	15526	125ST-M10
73	16	5306-01-194-6428	61888	01109-10025
73	17	5306-01-178-2059	61888	01100-08015
73	18	6210-01-174-0090	61888	78247-28204
73	19	5310-00-959-4679	96906	MS35340-45
73	20	5310-01-175-9278	61888	78260-69328
73	21	5340-01-186-9120	61888	78260-69323
73	22	5340-01-176-7414	61888	78260-69324
73	23	5325-01-174-8812	61888	22252-42121
73	24		61888	23659-12101
73	25	5306-01-180-8680	61888	01109-10020
73	26	5310-01-177-5904	61888	02000-10010
73	27	5315-00-236-8357	96906	MS24665-368
73	28		61888	22859-12031
73	29		61888	23656-42491
73	30	5315-01-177-9852	61888	02262-10025
73	31		61888	78260-69344
73	32	5340-01-178-2206	61888	23456-42181
73	33	9905-01-174-0954	61888	78260-69342
73	34	9905-01-175-5629	61888	09210-10200
73	35		61888	78260-69340
73	36		61888	52672-72121
73	37	5310-01-169-8267	61888	02000-00012
73	38	5310-01-171-8126	61888	02011-00012
73	39	5306-01-178-3681	61888	01103-12035
73	40	5340-01-178-7453	61888	24456-40201
73	41	5310-01-175-3717	61888	23656-42601
73	42	5306-01-178-2052	61888	23656-42351
74	1	2540-01-179-4003	61888	24846-80302
74	2	5310-00-959-4679	96906	MS35340-45
74	3	5310-01-169-8258	61888	01400-00008
74	4	5306-01-178-2060	61888	01100-10016
74	5	5310-01-173-3641	61888	02010-00010
74	6	5310-01-168-3075	61888	22252-32251
74	7	2540-01-173-1368	61888	22679-12032
74	8	2510-01-176-9557	61888	23656-50201
74	9	3930-01-175-6450	61888	24466-50201
74	10	5310-01-122-3214	15526	125ST-M10

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
74	11	5310-01-173-3641	61888	02010-00010
74	12	5306-01-178-2058	61888	01100-10020
75	1	4320-01-178-8836	61888	14437-10201
75	2	5306-01-179-1122	61888	B-20121-31293
75	3	5310-01-173-3641	61888	02010-00010
75	4		61888	99999-01027
75	5		61888	B-20121-30801
75	6		61888	B20121-31001
75	7		61888	B-20121-30901
75	8		61888	B-20121-31101
75	9		61888	99999-01029
75	10		61888	99999-01030
75	11		61888	99999-01032
75	12		61888	99999-01031
75	13		61888	99999-01028
75	14		61888	B-20121-30720
75	15		61888	B-20121-31401
75	16		61888	02110-00032
75	17		55883	IDP4M1833
75	18	3020-01-179-5849	61888	N-12353-L1101
75	19	3110-01-177-0940	61888	N-12354-L6801
75	20	3020-01-174-9330	61888	N-12352-L1101
76	1	4820-01-188-3271	61888	23657-32301
76	2	3930-01-178-6664	61888	B-21013-31750
76	3	4730-01-178-9695	61888	B-21001-00128
76	4		61888	B-21001-00035
76	5	3930-01-178-6665	61888	B-21013-31380
76	6		61888	99999-01035
76	7	5360-01-178-1740	61888	B-21011-30618
76	8	5305-01-178-1510	61888	B-21011-30528
76	9		61888	B-95133-00500
76	10	3930-01-178-6666	61888	B-21013-30151
76	11		61888	99999-01033
76	12		61888	99999-01034
76	13	5330-01-177-8336	61888	B-21011-31702
76	14	4820-01-177-3795	61888	B-21011-31011
76	15	5340-01-178-2033	61888	B-21011-30702
76	16	5305-01-178-1511	61888	B-21011-30507
76	17	5360-01-179-1221	61888	B-21011-30603
76	18	4820-01-181-1852	61888	B-21011-32404
76	19	5360-01-177-8127	61888	B-21011-30604
76	20	5305-01-182-8920	61888	01000-06010
76	21	5306-01-193-6764	61888	01170-06018
76	22		61888	B-21001-00689
76	23		61888	B-21011-32801
76	24		61888	B-21001-00106
76	25	3930-01-178-6667	61888	B-21013-30011
76	26		61888	99999-01036
76	27		61888	99999-01037
76	28		61888	99999-01038
76	29	4820-01-187-1966	61888	63130-25175

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
76	30	4320-01-178-6650	61888	B-21011-30104
76	31	5307-01-179-1301	61888	B-21031-30103
76	32	5307-01-178-1512	61888	B-21031-30104
76	33	5310-01-178-1658	61888	B-93128-10082
76	34	5310-01-178-1659	61888	B-93118-08652
77	1	3040-01-205-8807	61888	23657-40202
77	2		61888	23657-42002
77	3	3120-01-178-2130	61888	23457-42101
77	4	3040-01-186-5752	61888	23657-40212
77	5		61888	23657-42022
77	6	3120-01-178-2130	61888	23457-42101
77	7		61888	23657-40222
77	8		61888	23657-42042
77	9	3120-01-178-2130	61888	23457-42101
77	10	5355-01-186-9035	61888	22117-40032
77	11	5365-01-175-7011	61888	23657-42131
77	12	5365-01-178-3773	61888	22517-40051
77	13	5315-01-184-5786	61888	02200-16010
77	14	5310-01-116-1212	62983	471060
77	15	5315-01-176-1105	61888	22717-40061
77	16	3040-01-204-1278	61888	23657-42081
77	17	5306-01-172-2523	61888	01100-10040
77	18	5310-01-173-3641	61888	02010-00010
77	19	5310-01-182-4095	61888	01400-00010
77	20	5310-01-169-8258	61888	01400-00008
77	21	5310-00-959-4679	96906	MS35340-45
77	22	5340-01-176-7496	61888	24847-42061
77	23		61888	02000-00008
77	24	5306-01-180-4730	61888	01100-08025
77	25	3040-01-177-8562	61888	23457-42041
77	26	5310-01-138-3289	61888	02010-00006
77	27	5306-01-178-2061	61888	01100-06012
78	1		61888	24458-50111
78	1	3930-01-179-2605	61888	24458-50011
78	2	3040-01-175-6466	61888	24458-50321
78	3		61888	24458-52041
78	4	5365-01-174-0591	61888	22678-52021
78	5	3930-01-209-6039	61888	24458-50301
78	6		61888	24458-50201
78	7	3120-01-177-0944	61888	27738-22201
78	8	5340-01-176-8159	61888	23658-50351
78	9	3120-01-176-1022	61888	23468-52101
78	10		61888	23658-52071
78	11	5306-01-181-7462	61888	01103-14055
78	12	4730-00-050-4208	61888	04901-00100
78	13	5310-01-175-9291	61888	23658-52101
78	14	5340-01-176-7469	61888	23658-52401
78	15	5305-01-177-9717	61888	01066-10012
78	16	5365-01-176-7425	61888	24458-52081
78	17		61888	22678-52101
78	18		61888	23658-52031

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
78	19		61888	23658-52061
78	20		61888	23658-52051
78	21		61888	23658-52141
78	22		61888	03350-00650
78	23	5310-01-177-5915	61888	02011-00014
78	24	5310-01-176-5876	61888	01400-10014
78	25	3040-01-176-6096	61888	24458-50211
78	26		61888	24458-52441
78	27		61888	24458-52421
78	28		61888	24458-52431
78	29	5315-01-176-8204	61888	23458-52001
78	30		61888	23648-50161
78	31	5310-01-173-3641	61888	02010-00010
78	32	5306-01-178-2058	61888	01100-10020
78	33	4730-01-167-2824	61888	04901-00190
79	1	5985-01-176-4293	61888	78260-69028
79	2	5365-01-175-7012	61888	23818-30071
79	3	5365-01-179-5983	61888	02100-00025
79	4	5310-01-177-0894	61888	22548-34051
79	5	3110-01-181-2566	61888	23458-32051
79	6	5310-01-169-9632	61888	02010-00012
79	7	5306-01-178-2062	61888	01100-12040
79	8	5365-01-180-5365	61888	02100-00045
79	9	3110-01-177-0941	61888	23458-22111
79	10		61888	24450-73441
79	11	5310-01-177-0902	61888	02011-00016
79	12	5306-01-178-3682	61888	01103-16045
79	13	5340-01-177-3960	61888	24450-73431
79	14	3930-01-175-5222	61888	78260-69025
79	15	5340-01-176-7466	61888	22678-32001
79	16	5365-01-175-0682	61888	22679-43231
79	17	3930-01-177-1015	61888	24450-70401
79	18	5310-01-177-3400	61888	02011-00020
79	19	5305-01-195-5045	61888	01103-20050
79	20	3020-01-175-3202	61888	23650-73581
79	21	5365-00-663-2215	96906	MS16624-1255
79	22	3020-01-181-0326	61888	23650-73611
79	23	5365-01-177-0091	61888	02100-00040
79	24	5365-01-178-2196	61888	02110-00090
79	25	3110-01-194-5976	61888	03042-06308
79	26	5365-01-178-2197	61888	02110-00100
79	27	3110-01-194-5977	61888	03040-06013
79	28	3110-01-176-5926	61888	23658-33001
79	29	3020-01-181-6691	61888	22438-45651
79	30	3020-01-180-7264	61888	22438-43001
79	31	5315-01-178-9771	61888	24459-42391
79	32	3040-01-175-6503	61888	24459-42381
79	33	5310-01-175-3707	61888	22218-40191
79	34	5310-01-176-5877	61888	01400-00018
79	35	5315-00-013-7214	96906	MS24665-359
79	36	5306-01-171-8664	61888	01100-10050

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
79	37	5310-01-168-3075	61888	22252-32251
79	38	5365-01-168-3196	61888	22252-32241
79	39	5340-01-227-8694	61888	78260-69329
79	40	5310-01-168-1775	61888	23651-02011
79	41	5310-01-173-3641	61888	02010-00010
79	42	5306-01-170-3178	61888	01100-10025
79	43	3110-01-177-0942	61888	22578-22401
79	44		61888	22519-10291
79	45		61888	78260-69021
79	46	5310-01-179-4422	61888	22548-34061
79	47		61888	22548-34021
79	48	5310-01-171-8126	61888	02011-00012
79	49	5306-01-178-3681	61888	01103-12035
79	50	3930-01-178-3046	61888	78260-69022
79	51		61888	23648-50161
79	52	5310-01-173-3641	61888	02010-00010
79	53	5306-01-178-2058	61888	01100-10020
79	54	5315-01-176-4071	61888	23658-02001
79	55	4730-01-192-8163	61888	04901-00160
79	56	3120-01-176-1023	61888	22518-30031A
79	57	5340-01-174-8438	61888	22018-30064
79	58	5310-01-177-0901	61888	02010-00016
79	59	5306-01-178-3680	61888	01100-16065
80	1	3930-01-178-7143	61888	78260-69037
80	1	3930-01-178-8552	61888	78260-69038
80	2	5305-01-174-8217	61888	22298-40111
80	3	4730-00-857-0960	12603	662634
80	4	4730-01-177-3774	61888	04921-02005
80	5	3040-01-178-7141	61888	78260-69039
80	5	3040-01-178-7142	61888	78260-69040
80	6	5306-01-195-3255	61888	24459-43441
80	7	5305-01-181-7926	61888	23659-44581
80	8	5330-01-178-2092	61888	03320-00180
80	9	4730-01-176-2803	61888	24459-42311
80	10	5360-01-176-7480	61888	27978-42601
80	11	5310-01-176-5831	61888	78260-69238
80	12	3930-01-176-1198	61888	24849-42281
80	13	5365-01-176-1292	61888	27978-32581
80	14	5310-01-122-3214	15526	125ST-MIO
80	15	5310-01-173-3641	61888	02010-00010
80	16	5310-01-182-4095	61888	01400-00010
80	17		61888	24459-42271
80	18	5306-01-178-3679	61888	01100-12080
80	19	5310-01-169-9632	61888	02010-00012
80	20	5310-01-178-3700	61888	01400-00012
80	21	3120-01-176-1024	61888	22578-42021
80	22	3040-01-175-6467	61888	24459-42261
80	23		61888	03300-00700
80	24		61888	03350-00600
80	25	3040-01-176-4278	61888	78260-69018
80	26		61888	03320-00250

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FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
80	27	3040-01-175-6463	61888	57915-52322
80	28		61888	27978-42421
80	29	5330-01-176-3932	61888	24459-43401
80	30		61888	24459-42291
80	31		61888	27978-42411
80	32	5310-01-178-3698	61888	22674-3211
80	33		61888	02200-04036
81	1	3930-01-183-2507	61888	78260-69032
81	2	3040-01-176-2772	61888	78260-69033
81	3	5365-01-177-0091	61888	02100-00040
81	4		61888	23659-44842
81	5	3040-01-176-4279	61888	23650-82501
81	6		61888	24450-82231
81	7		61888	24450-82251
81	8		61888	24450-82241
81	9	4810-01-176-4280	61888	24450-82221
81	10	5365-01-169-6531	61888	23870-52871
81	11	4730-00-857-0960	12603	662634
81	12	5305-01-174-8217	61888	22298-40111
81	13	3120-01-176-9803	61888	23910-22111
81	14		61888	24450-82291
81	15		61888	24450-82281
81	16	4310-01-184-3184	61888	78260-69016
81	17	5365-01-178-5995	61888	23918-52131
81	19		61888	02200-03040
81	19	5310-01-176-5877	61888	01400-00018
81	20	5310-01-175-3707	61888	22218-40191
81	21	3040-01-175-6503	61888	24459-42381
81	22	3020-01-182-5687	61888	22438-45511
81	23	3020-01-180-7264	61888	22438-43001
81	24	5315-01-178-9771	61888	24459-42391
81	25	5306-01-178-7397	61838	24450-82401
81	26	3040-01-175-6440	61888	78247-28320
81	27	5360-01-176-7481	61888	24230-52701
81	28	5340-01-189-7776	61888	24230-82071
81	29	5305-01-181-7926	61888	23659-44581
81	30	5310-01-173-3641	61888	02010-00010
81	31	5310-01-182-4095	61888	01400-00010
82	1	4730-00-050-4208	61888	04901-00100
82	2	3930-01-174-4175	61888	78260-69012
82	3		61888	24358-12111
82	4		61888	22198-12051
82	5		61888	02270-04032
82	6		61888	78260-69232
82	7	3930-01-176-2855	61888	78260-69001
82	8	3930-01-185-6709	61888	78260-69002
82	9	3120-01-181-0786	61888	23460-72231
82	10		61888	23658-22041
82	11	2540-01-174-4143	61888	78260-69220
82	12	3110-01-177-0942	61888	22578-22401
82	13	5365-01-179-5983	61888	02100-00025

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
82	14	4730-01-174-9447	61888	22199-12401
82	15	4730-01-192-8163	61888	04901-00160
82	16	3120-01-180-6687	61888	63026-12151
82	17	5330-01-178-3716	61888	03300-00650
82	18	5365-01-177-3428	61888	02110-00085
82	19	5315-01-177-8512	61888	02270-06040
82	20	5315-01-176-1111	61888	62516-12261
82	21	5310-01-169-9632	61888	02010-00012
82	22	5306-01-178-3344	61888	01100-12025
82	23	5310-01-175-3720	61888	23917-42191
82	24	5365-01-174-8449	61888	22679-43831
82	25	3120-01-175-0593	61888	22679-43761
82	26	5310-01-177-0901	61888	02010-00016
82	27	5306-01-181-7461	61888	01103-16040
82	28	5365-01-179-5983	61888	02100-00025
82	29	3110-01-177-0942	61888	22578-22401
82	30	5306-01-178-2058	61888	01100-10020
82	31	5310-01-173-3641	61888	02010-00010
82	32	5365-01-176-5770	61888	78260-69219
82	33	5365-01-176-1293	61888	78260-69225
82	34	3110-01-177-0941	61888	23458-22111
82	35	5365-01-180-5365	61888	02100-00045
82	36	5306-01-178-3344	61888	01100-12025
82	37	5310-01-169-9632	61888	02010-00012
82	38	5340-01-176-8166	61888	78260-69218
82	39	3040-01-175-6395	61888	62016-12222
82	40	5306-01-178-3680	61888	01100-16065
82	41	5310-01-177-0901	61888	02010-00016
82	42	3930-01-174-3731	61888	62016-12251
82	43	3930-01-174-5948	61888	78260-69003
83	1	3040-01-176-9604	61888	78260-69004
83	2	3040-01-175-5478	61888	78260-69006
83	3	5365-01-186-1786	61888	27978-52111
83	4		61888	27918-92171
83	5		61888	27918-92161
83	6	5330-01-178-1806	61888	27918-92151
83	7	2530-01-176-2856	61888	27918-92141
83	8	5330-01-178-6025	61888	03350-00400
83	9	3120-01-170-3845	61888	22675-32021
83	10	5330-01-178-3718	61888	03350-00250
83	11	4810-01-174-2327	61888	62016-12521
83	12	5330-01-176-7920	61888	27738-52091
83	13	5330-01-178-3717	61888	03300-00390
83	14	5330-01-177-8337	61888	27738-52061
83	15	5310-01-169-2907	61888	01412-10016
83	16	5315-01-177-8511	61888	02200-04030
83	17	3040-01-176-2773	61888	78260-69005
84	1	4720-01-181-0112	61888	04720-13910
84	2	4730-01-178-2915	61888	04911-00018
84	3	2940-01-174-2311	61888	23457-52221
84	4	4730-01-178-2914	61888	04911-00048

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
84	5	4720-01-178-7014	61888	04700-12050
84	6	5310-01-176-4002	61888	80430-00006
84	7	5306-01-180-8678	61888	80110-00624
84	8		61888	22193-03011
84	9	5307-01-179-2374	61888	23037-12001
84	10	5330-00-579-6861	96906	MS28775-236
84	11	5330-01-178-3358	61888	03310-00300
84	12	5330-01-178-3357	61888	03310-00350
84	13	4730-01-177-0972	61888	23657-62001
84	14	5310-01-176-4002	61888	80430-00006
84	15	5310-01-173-3641	61888	02010-00010
84	16	5306-01-178-6218	61888	80110-00616
84	17	5310-01-122-3214	15526	125ST-M100
84	18	5310-01-193-6765	61888	01402-00010
84	19	4720-01-177-8477	61888	78247-28010
84	20	4730-01-019-9815	61888	04134-00404
84	21	4720-01-176-4056	61888	04700-12105
84	22	4730-01-178-2916	61888	04911-00042
84	23	2910-01-177-5392	61888	25597-60301
84	24	5330-01-178-2092	61888	03320-00180
84	25	5330-01-178-2092	61888	03320-00180
84	26	4730-01-167-4402	61888	04911-00044
84	27	4720-01-177-1068	61888	24457-62011
84	28	4730-01-177-0970	61888	25177-61131
84	29	4720-01-176-8472	61888	24457-62021
84	30	4730-01-178-8837	61888	04000-00200
84	31	4730-01-179-2913	61888	24457-60211
84	32	4730-01-181-0097	61888	23657-60291
84	33	4730-01-175-1104	61888	23457-60311
84	34	4730-01-175-1104	61888	23457-60311
84	35	4730-01-179-5410	61888	04150-00202
84	36	5330-01-177-3849	61888	03320-00110
84	37	5330-01-177-3849	61888	03320-00110
84	38	4730-01-179-5410	61888	04150-00202
84	39	5310-01-169-8258	61888	01400-00008
84	40	5310-00-959-4679	96906	MS35340-45
84	41	4710-01-176-2996	61888	23657-62121
84	42	5306-01-178-6003	61888	01106-08030
84	43	4720-01-177-0976	61888	24457-60401
84	44	5340-01-175-4276	61888	20317-60331
84	45	5310-00-959-4679	96906	MS35340-45
84	46	5306-01-180-4730	61888	01100-08025
84	47	4720-01-192-8096	61888	23460-92301
84	48	4720-01-177-0975	61888	23657-60211
85	1	4820-01-176-2768	61888	23658-40403
85	2	4820-01-176-2808	61888	24459-42971
85	3	5330-01-178-6026	61888	03320-00280
85	4		61888	23659-45311
85	5	5365-01-177-3429	61888	02110-00018
85	6	4730-01-177-2503	61888	23659-45301
85	7	4820-01-176-2857	61888	24459-42921

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85	8	4820-01-174-2301	61888	24459-42951
85	9	5360-01-176-7482	61888	24459-42961
85	10		61888	24459-42911
85	11		61888	24459-42901
85	12	4720-01-181-0100	61888	78260-69236
85	13	4730-01-178-2915	61888	04911-00018
85	14	5306-01-178-7390	61888	01120-10050
85	15	4730-01-175-1102	61888	23650-92071
85	16	5310-01-182-4095	61888	01400-00010
85	17	4720-01-178-8470	61888	04720-13079
85	18	4720-01-175-7685	61888	24230-92321
85	19	5975-01-084-0977	61888	27132-40181
85	20	4730-01-019-9815	61888	04134-00404
85	21	4730-01-179-5411	61888	04150-00404
85	22	4720-01-176-6327	61888	23650-92061
85	23		61888	78260-69234
85	24	5306-01-170-3178	61888	01100-10025
85	25	5310-01-173-3641	61888	02010-00010
85	26	5310-01-138-3289	61888	02010-00006
85	27	5306-01-178-6004	61888	01100-06020
85	28	5340-01-176-9796	61888	24239-44221
85	29	4720-01-176-8473	61888	24450-92101
85	30	4730-01-177-0971	61888	23659-44601
85	31	4730-01-019-9815	61888	04134-00404
85	32	4730-01-179-5411	61888	04150-00404
85	33	4720-01-177-3501	61888	24450-92121
85	34	5330-01-178-6026	61888	03320-00280
85	35	4730-01-176-2858	61888	23659-44681
85	36	5340-01-171-8007	61888	27132-40171
85	37	5340-01-176-9795	61888	24239-44311
85	38	4720-01-181-0112	61888	04720-13910
86	1	5306-01-180-4733	61888	62130-14031
86	2		61888	63130-15301
86	3	5310-01-176-5883	61888	62050-12021
86	4		61888	62130-14041
86	5	5306-01-178-3345	61888	01100-16070
86	6	5310-01-177-0901	61888	02010-00016
86	7		61888	62130-14141
86	8	5310-01-176-5884	61888	62130-12101
86	9		61888	62050-12021
86	10		61888	63130-15301
86	11		61888	62130-14031
86	12	4730-01-176-9505	61888	63110-12031
86	13		61888	89140-00006
86	14	4720-01-176-4050	61888	62130-12011
86	15	4730-01-175-1105	61888	23307-62281
86	16	4720-01-176-9510	61888	62130-12001
86	17	5306-01-178-2058	61888	01100-10020
86	18	5310-01-173-3641	61888	02010-00010
86	19	5306-01-172-2523	61888	01100-10040
86	20	5310-01-173-3641	61888	02010-00010

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
86	21	5340-01-177-0100	61888	63810-12081
86	22	4710-01-176-1298	61888	63130-12101
86	23	5340-01-176-8208	61888	62130-14211
86	24	5310-00-959-4679	96906	MS35340-45
86	25	5306-01-178-2059	61888	01100-08015
86	26	3930-01-175-6396	61888	78260-69231
86	27	3930-01-179-5542	61888	62023-42811
86	28	4710-01-176-2859	61888	62130-14061
86	29	4720-01-176-4051	61888	04601-33160
86	30	5340-01-184-6531	61888	62130-14001
87	1	4720-01-176-1065	61888	04471-03070
87	2	4730-01-179-6267	61888	63110-12351
87	3	5330-01-177-3849	61888	03320-00110
87	4	4730-01-179-2909	61888	53110-12421
87	5	4720-01-176-1066	61888	04471-03060
87	6	5365-01-177-1065	61888	62336-13011
87	7	4730-01-178-7170	61888	63110-14751
87	8	4730-01-178-7169	61888	63110-14731
88	1	5330-01-177-3405	61888	52252-72071
88	2	4710-01-179-6594	61888	23657-53002
88	3	5310-00-959-4679	96906	MS35340-45
88	4	5306-01-169-7032	61888	01100-08020
88	5	2590-01-187-2066	61888	23657-53051
88	6		61888	23657-53101
88	7	5315-00-234-1863	96906	MS24665-300
88	8		61888	78260-69333
88	9		61888	22197-52091
88	10		61888	22197-52081
88	11	5310-01-173-3610	61888	01402-00008
88	12	5310-01-169-8258	61888	01400-00008
88	13	5330-01-177-8445	61888	22252-21011

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches

1 Meter = 100 Centimeters = 1,000 Millimeters = 39.37 Inches

1 Kilometer = 1,000 Meters = 0.621 Miles

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches

1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet

1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE

1 Cu Centimeter = 1,000 Cu Millimeters = 0.06 Cu Inches

1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces

1 Liter = 1,000 Milliliters = 33.82 Fluid Ounces

TEMPERATURE

5/9 (°F -32) = °C

212° Fahrenheit is equivalent to 100° Celsius

90° Fahrenheit is equivalent to 32.2° Celsius

32° Fahrenheit is equivalent to 0° Celsius

9/5 C° +32 = F°

WEIGHTS

1 Gram = 0.001 Kilograms = 1,000 Milligrams = 0.035 Ounces

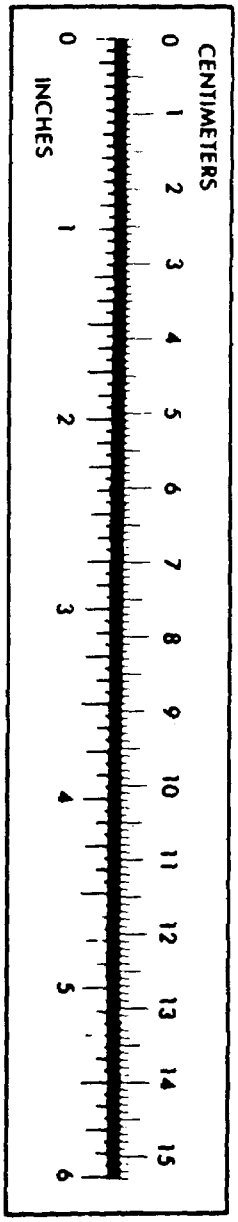
1 Kilogram = 1,000 Grams = 2.2 Lb.

1 Metric Ton = 1,000 Kilograms = 1 Megagram = 1.1 Short Tons

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds Per Square Inch	Kilopascals	6.895
Miles Per Gallon	Kilometers Per Liter	0.425
Miles Per Hour	Kilometers Per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds Per Square Inch	0.145
Kilometers Per Liter	Miles Per Gallon	2.354
Kilometers Per Hour	Miles Per Hour	0.621



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